CCD-TR808E
RMT-508

SERVICE MANUAL

AEP Model

Remote commander is available as a unit. But as individual parts the battery case lid of commander is only available.

video Hi8
Handycam

FL MECHANISM

For MECHANISM ADJUSTMENTS, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL II " (9-972-705-11).

SPECIFICATIONS

Video camera recorder

System

Video recording system	Four Rotary heads, Helical scanning FM system
Audio recording system	Four Rotary head, Helical scanning FM system
Video signal	PAL colour, CCIR standards
Usable cassette	8 mm video format cassette (Hi8 or standard 8 mm)
Tape speed	SP mode: Approx. 20.051 mm (13/16 in)/second LP modo: Approx 10.058 mm (13/32 in)/second
Recording time	SP mode: 1 hour and 30 minutes (E5/P5-90) LP mode: 3 hours (E5/P5-90)
Playback time	SP mode: 1 hour and 30 minutes (E5/P5-90) LP mode: 3 hours (E5/P5-90)
Fast-forward/rewind time	Approx. 8 min. (E5/P5-90)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electronic viewfinder (black and white)
Lens	Combined 10 x power zoom lens f=6.2 to 62.4 mm (1/4 to 2 1/2 inches) 45 to 450 mm (1 13/16 to 17 3/4 inches) when converted into a 35-mm still camera F 1.6 to 2.9 Filter diameter 52 mm (2 1/8 inches) TTL autofocus system inner focus wide macro system
Colour temperature	Auto, HOLD, Indoor ☼ 3,200 K, Outdoor ☀ 5,800 K
Minimum illumination	3 lx (F 1.6)
Illumination range	3 lx to 100,000 lx
Recommended illumination	More than 100 lx
Aperture correction	Auto

Input and output connectors

S video output	4-pin mini DIN Luminance signal: 1 Vp-p, 75 ohms, unbalanced, sync negative Chrominance signal: 0.3 Vp-p, 75 ohms, unbalanced
Video output	Phono jack, 1 Vp-p, 75 ohms, unbalanced, sync negative
Audio output	Phono jacks (2: stereo L and R), −7.5 dBs, (at load impedance 47 kilohms) impedance less than 2.2 kilohms
RFU DC OUT	Special mini-jack, DC 5 V
Headphones jack	Stereo mini-jack (ø 3.5)
Remote jack	Stereo mini-mini-jack (ø 2.5)
MIC jack	Stereo mini-jack, −66 dBs low impedance with 2.5 to 3 V DC, output impedance 6.8 kilohms (ø 3.5)

— Continued on next page —

Hi 8 VIDEO CAMERA RECORDER

SONY®

MICROFILM

General

Power requirements	On battery mounting surface 6.0 V (Battery pack) 7.5 V (AC power adaptor) 9.0 V (Alkaline batteries)
Power consumption	6.4 W (camera recording) including the viewfinder
Installation	Vertically, Horizontally
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	-20°C to +60°C (-4°F to +140°F)
Dimensions	Approx. 109 x 106 x 189 mm (w/h/d) (4 3/8 x 4 1/4 x 7 1/2 inches)
Mass	Approx. 860 g (1 lb 14 oz) excluding the battery pack, lithium battery, cassette, lens cap, jack cover and shoulder strap Approx. 1,100 g (2 lb 6 oz) including the battery pack NP-55H, lithium battery CR2025, cassette E5-90, lens cap, jack cover and shoulder strap
Microphone	Electret condenser microphone, stereo type

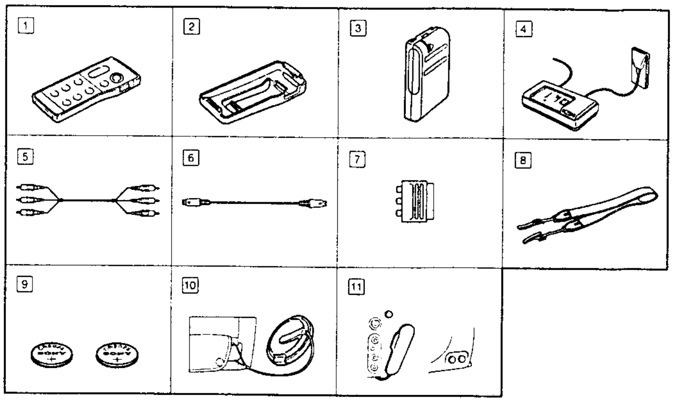
AC power adaptor

Power requirements	110 - 240 V AC, 50/60 Hz
Power consumption	20 W
Output voltage	DC OUT: 7.5 V, 1.6 A in operating mode Battery charge terminal: 10 V, 1.1 A in charge mode
Application	Sony battery pack NP-55H, NP-66H, NP-77H, NP-77HD
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	-20°C to +60°C (-4°F to +140°F)
Dimensions	Approx. 170 x 41.6 x 82 mm (w/h/d) (6 3/4 x 1 11/16 x 3 1/4 inches) including projecting parts and controls
Mass	Approx. 520 g (18 oz)

Design and specifications are subject to change without notice.

Note
This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

Supplied accessories



1 Wireless Remote Commander (1)

2 Remote Commander Holder (1)

3 NP-55H Battery Pack (1)

4 AC-V35/V35A AC power adaptor (1)

5 A/V connecting cable (1)

6 S video connecting cable (1)

7 21-pin adaptor (1)

8 Shoulder strap (1)

9 CR2025 Lithium Batteries (2)
(for camcorder and for the Remote Commander)

10 Lens cap* (1)

11 Jack cover* (1)

* Attached to the camcorder

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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There is the color reproduction standard frame at the back of the book.

SERVICE NOTE

[SEMICONDUCTOR FOR CORRECTION LIST DISPLAY]

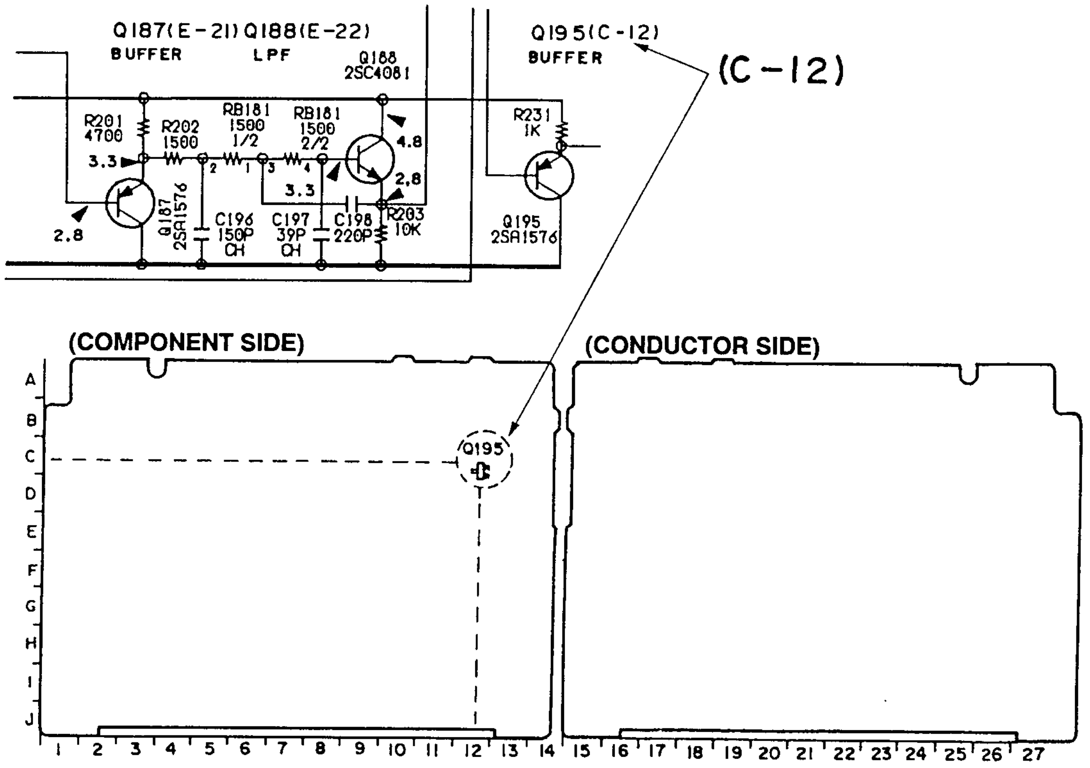
Part code and part name of the semiconductor for correction of the print board is discribed in the space of each print figure. Use this list when ordering parts.

[SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red in schematic diagrams. This enables to find the location on the board easily when servicing.

[PARTS LOCATION DIAGRAM RELATED TO POWER SUPPLY]

The parts location diagram for the power supply which are often checked and replaced when repairing the fuse and IC link and so on. (See pages 77, 91, 103, 120, 153 and 155.)
This diagram is useful for repair.



Q187(E-21) Q188(E-22)
BUFFER
LPF
Q188
2SC4081
R201
4700
R202
1500
RB181
1500
1/2
RB181
1500
2/2
3.3
2.8
4.8
2.8
3.3
Q187
2SA1576
C196
150P
CH
C197
39P
CH
C198
220P
R203
10K
Q195(C-12)
BUFFER
(C-12)
R231
1K
Q195
2SA1576
(COMPONENT SIDE)
(CONDUCTOR SIDE)
Q195
A
B
C
D
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[HEAD CLEANING]

After an extended period of use the video image may become indistinct or may not appear at all during playback of a tape. The cause of this usually are dirty video heads. For remedy, cleaning of the heads is required.

Check for Head Clogs During Recording

① Use a blank tape, record a short section, then press the stop button to stop.
② Set to recording mode again.
③ If the [✲] mark is flashing in the viewfinder at this time, head clogs are occurred.

Check During Playback of a Tape

① Play back a pre-recorded tape and display the image on a TV screen.
② If there is no sound and the image is unstable, no image appears on the screen, or tape transport is unstable, head clogs are occurred.

Remedy

[Cleaning method using a cleaning tape]

- Use the Cleaning Tape. (Please follow the instructions attached to the cleaning tape.)

SECTION 1
GENERAL

This section is extracted from instruction manual.

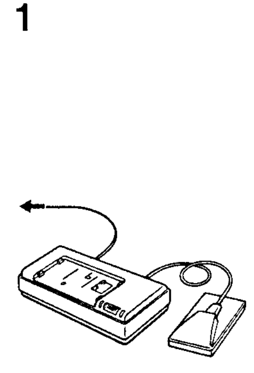
Charging and Installing the Battery Pack

Before using your camcorder, you first need to charge and install the battery pack. The supplied battery pack and optional battery packs have not been charged when you purchased them. To charge the battery pack, use the supplied AC-V35/V35A AC power adaptor.

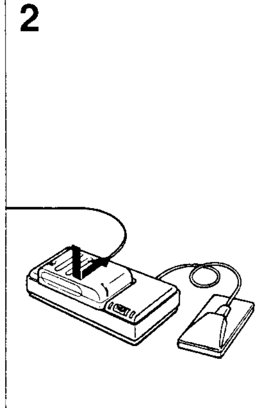
Charging the Battery Pack

Charge the battery pack on a flat place without vibration.
(1) Connect the AC power adaptor to a wall outlet. **(2)** Align the right side of the battery pack with the line on the AC power adaptor, then slide the battery pack in the direction of the arrow. **(3)** Set the selector on the AC power adaptor to CHARGE.
The CHARGE (orange) and POWER (green) lamps light up. Charging begins.
When charging is completed, the CHARGE lamp goes out. Set the selector to STANDBY and unplug the AC power adaptor from the wall outlet. Then remove the battery pack and install it on the camcorder. To stop charging, set the selector to STANDBY.

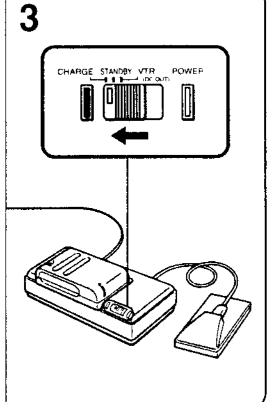
1



2



3



Charging Time and Battery Life

Battery pack	NP-55H (supplied)	NP-77H/77HD	NP-66H
Charging time *	70	140	110
Battery life**	60	130	80

* Approximate charging time to charge an empty battery pack using the AC-V35/V35A (Lower temperatures require a longer charging time.)
** Approximate continuous recording time indoors

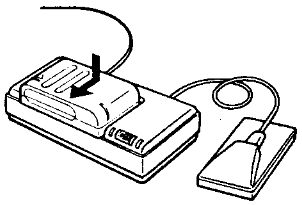
Important!
Use the battery completely before recharging!

Before you recharge the battery, make sure the battery has been used up (discharged) completely. Repeated charging while some capacity remains causes a lowering of battery capacity. However, the original battery capacity can be recovered if you use the battery completely and charge it fully again.

To use up the battery, remove the cassette and slide the POWER switch to CAMERA with the battery attached, and leave the camcorder until the ▭ indicator and the red lamp in the viewfinder flash rapidly.

Removing the Battery Pack

Slide the battery pack in the direction of the arrow.

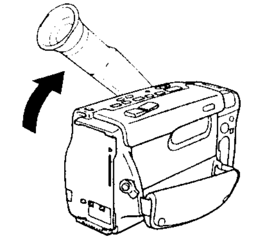


Note on charging the battery pack
- The POWER lamp will remain lit for a while even if the battery pack is removed and the power cord is unplugged after charging the battery pack. This is normal.
- If the POWER lamp does not light, set the selector to STANDBY and disconnect the power cord. After about one minute, reconnect the power cord and set the selector to CHARGE again.
- You cannot operate the camcorder using the AC power adaptor while charging the battery pack.

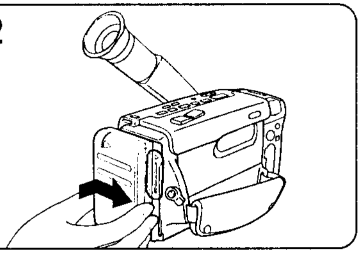
Installing the Battery Pack

(1) Lift up the viewfinder. **(2)** Align the right side of the battery pack with the white line on the camcorder, and slide the battery pack in the direction of the arrow.

1



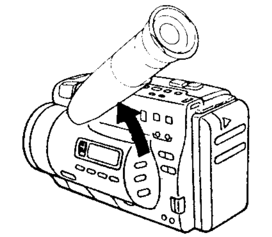
2



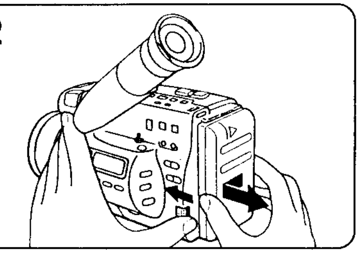
Removing the Battery Pack

(1) Lift up the viewfinder. **(2)** While pressing BATT, slide the battery pack to the left.

1



2



Tips for Using the Battery Pack

This section shows you how you can get the most out of your battery pack.

Preparing the Battery Pack

Always Carry Additional Batteries

Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.
"Battery life" indicated in this manual is measured by the continuous recording time of the camcorder placed at room temperature using a fully-charged battery.

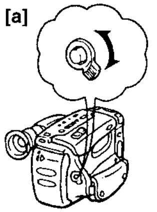
Battery Life is Shorter in Cold Environment

Battery efficiency is decreased and the battery will be used up more quickly if you are recording in cold environment.

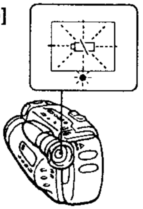
To Save Battery Power

Turn the STANDBY switch on the camcorder down when not recording to save battery power. **[a]**
A smooth transition between scenes can be made even if recording is stopped and started again. While positioning the subject, selecting an angle, or looking through the viewfinder lens, the lens moves automatically and the battery is used. The battery is also used when a tape is inserted or removed.

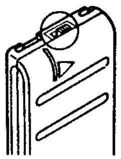
[a]



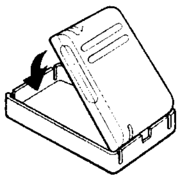
[b]



[c]

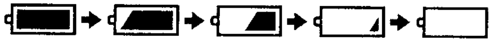


[d]



When to Replace the Battery Pack

While you are using your camcorder, the remaining battery indicator decreases gradually as battery power is used up.



When the remaining battery indicator reaches the lowest point, the ▭ indicator appears and starts flashing in the viewfinder. **[b]**
When the ▭ indicator in the viewfinder changes from slow flashing to rapid flashing while you are recording, slide the POWER switch to OFF on the camcorder and replace the battery pack. Leave the tape in the camcorder to obtain smooth transition between scenes after the battery pack is replaced.

Note on the remaining battery indicator
The remaining battery indicator of the camcorder may indicate a different remaining capacity from that of the NP-77HD battery pack (not supplied). The indicator of NP-77HD is more accurate.

Note on the Rechargeable Battery Pack

The Battery Heats Up

During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern.

Tips for Using the Battery Pack

Battery Care

- Remove the battery pack from the camcorder after using the battery pack, and keep it in a cool place. When the battery pack is attached to the camcorder, a small amount of current flows to the camcorder even if the POWER switch is set to OFF, which shortens battery life.
- The battery pack is always discharging even when it is not in use after charging. Therefore, you should charge the battery right before using the camcorder.

How to Use the Switch on the Battery Pack

This switch is provided so that you can mark the charged battery. Set the switch to the "no mark" position when charging is completed. Set the switch to the "red mark" position when the battery is used up (or in whichever direction you want to remind yourself). **[c]** on page 7.

The Life of the Battery Pack

The battery pack can be fully charged and discharged about 500 times under normal temperatures. If the battery indicator flashes rapidly just after turning on the camcorder with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

Charging Temperature

You should charge batteries at temperatures from 10°C to 30°C (from 50°F to 86°F). Lower temperatures require a longer charging time.

Note on Charging

A Brand-new Battery

A brand-new battery pack is not charged. Before using the battery pack, charge it completely.

Before Recharging a Used Battery Pack

- Make sure to use up the battery before recharging.
- If recording is completed before the ▭ indicator appears in the viewfinder, you should remove the tape, slide the POWER switch to CAMERA, turn up the STANDBY switch, and leave the camcorder until the battery indicator flashes rapidly .
- When you use the AC-S10 power adaptor or the DC-S10 car battery charger, you can use the discharging function.
- **Charging the usable battery causes a lowering of battery capacity. Battery capacity can be recovered if you fully discharge and charge the battery again.**

After Long Storage

Recharge the battery pack after a long period of storage. If the battery pack is charged fully but not used for a long time (about 1 year), it becomes discharged. Charge it again, but in this case the battery life will be shorter than normal. After several charging and discharging cycles, the battery life will recover its original capacity.

Note on the Terminals

If the terminals (metal parts on the back) are not clean, the battery duration will be shortened.
When the terminals are not clean or when the battery pack has not been used for a long time, repeat installing and removing the battery pack. This improves the contact condition. Also, wipe the + and – terminals with a soft cloth or paper.

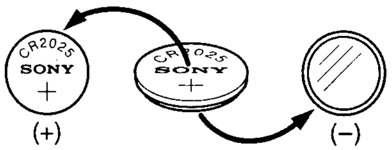
Be Sure to Observe the Following

- **To prevent an accident caused by a short circuit, do not allow metal objects such as a necklace to touch the battery terminals. Carry the battery pack attaching to the terminal cover. [d] on page 7**
- Keep the battery pack away from fire.
- Keep the battery pack dry.
- Do not open nor convert the battery pack.
- Do not expose the battery pack to any mechanical shock.

Installing the Lithium Batteries

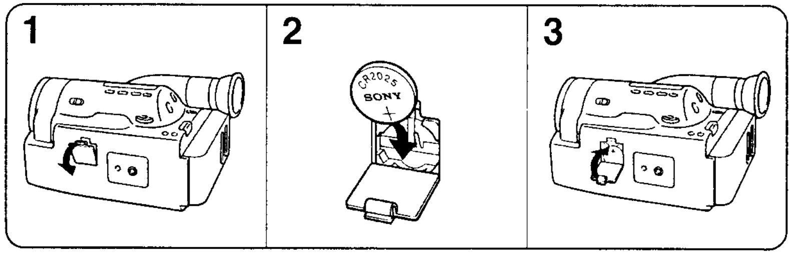
Your camcorder is supplied with two lithium batteries. One is for the camcorder, and the other is for the Remote Commander.

Note that lithium battery has a positive (+) and a negative (–) terminals as illustrated. **Be sure to install the lithium battery so that terminals on the battery match the terminals on the camcorder or the Remote Commander.**



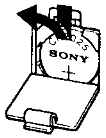
Installing the Lithium Battery in the Camcorder

To activate the clock, the world clock and a title, you must first install a lithium battery.
(1) Open the lid of the lithium battery compartment located at the bottom of the camcorder. **(2)** Install one of the supplied lithium batteries with the + (positive) side facing out. **(3)** Close the lid.



To Remove the Lithium Battery

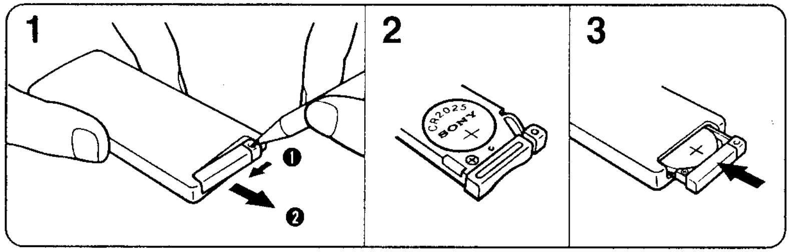
Push the battery down once and pull it out from the holder. When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date and time.



Installing the Lithium Batteries

Installing the Lithium Battery in the Remote Commander

To use the Remote Commander, you must insert the lithium battery.
(1) Pull out the lithium battery holder from the Remote Commander. **(2)** Install the lithium battery with the (+) (positive) side facing upward. **(3)** Put the lithium battery holder back into the Remote Commander.

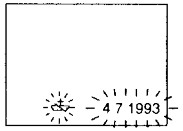


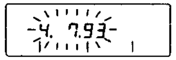
Lithium Battery Life

The lithium battery for the camcorder lasts for about 1 year under normal operation. When the battery becomes weak or dead, the date or time indicator keeps flashing in the display window and ⏚ indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA.

The lithium battery for the Remote Commander lasts for about 6 months under normal operation. When the battery becomes weak or dead, the Commander does not work.

In either cases, **replace the battery with the Sony CR2025 lithium battery. Use of another battery may present a risk of fire or explosion.**



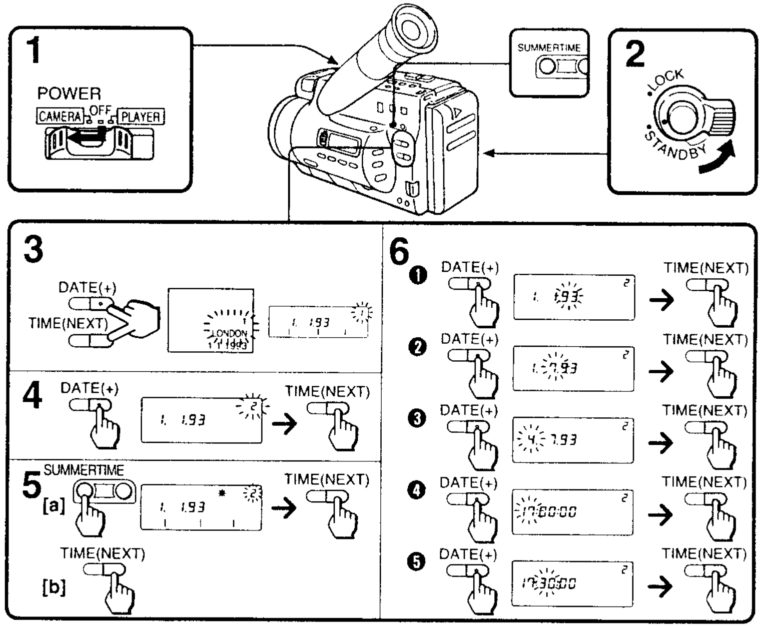


Cautions

- Keep the lithium battery out of the reach of children. Should the battery be swallowed, consult a doctor immediately.
- Do not hold the battery with the metallic tweezers, otherwise a short-circuit may occur.
- The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

Setting the Date and Time

Before setting the clock, make sure a power source and lithium battery are installed.
(1) While pressing the small green button on the POWER switch, slide it to CAMERA **(2)** Turn STANDBY up. **(3)** Press DATE (+) and TIME (NEXT) simultaneously for more than 2 seconds until the area name and number flash in the viewfinder. **(4)** Press DATE (+) to set your home area. **(5)** Set the Time:
[a] For summer time, press SUMMERTIME then press TIME (NEXT). **[b]** For standard time, press TIME (NEXT). **(6)** Adjust the flashing digits for the year, month, day and hour by pressing DATE (+) and TIME (NEXT). To set the year to 1993, there is no need to press DATE (+) in 6- ①. Note that when you keep DATE (+) pressed, the digits advance faster.


1
POWER
CAMERA
OFF
PLAYER
SUMMERTIME
2
LOCK
STANDBY
3
DATE(+)
TIME(NEXT)
LONDON
4
DATE(+)
TIME(NEXT)
5
SUMMERTIME
[a]
TIME(NEXT)
TIME(NEXT)
[b]
6
❶ DATE(+) TIME(NEXT)
❷ DATE(+) TIME(NEXT)
❸ DATE(+) TIME(NEXT)
❹ DATE(+) TIME(NEXT)
❺ DATE(+) TIME(NEXT)

Time Zones and Area Numbers and Names

Countries	Area name	Area number
The United Kingdom and Portugal (GMT)	LONDON	1
Other European countries (CET)	PARIS	2
Finland, Greece, etc.	CAIRO	3

Setting the Date and Time

To Correct the Date and Time Setting

Repeat steps 3 to 6.

To Check the Preset Date and Time

Press DATE (+) to display the date indicator in the viewfinder and the display window. Press TIME (NEXT) to display the time indicator. When you press the same button again, the indicator goes out.

To Reset to Standard Time

Press SUMMERTIME. The ☀ indicator goes off.

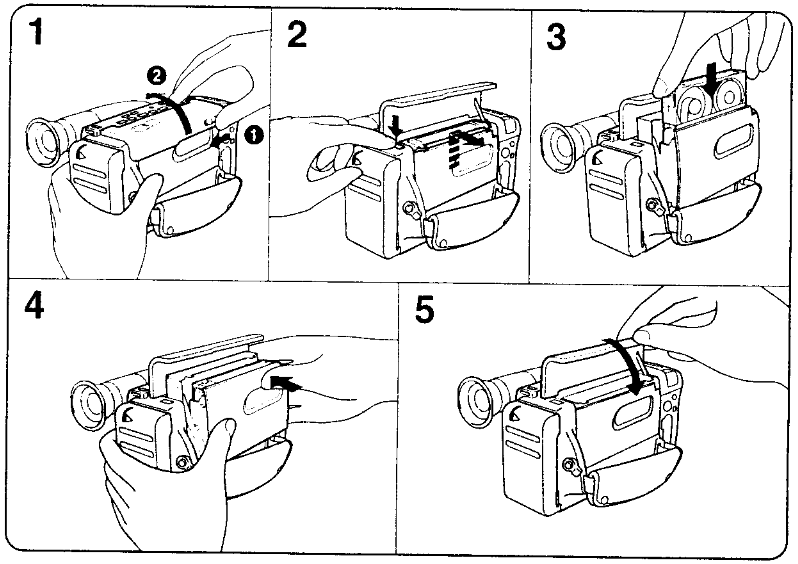
Note on the setting of the year

When you set the year, each time you press DATE (+) the digits change as follows.

1993 → 1994 → - - - → 2020
↑_______________________

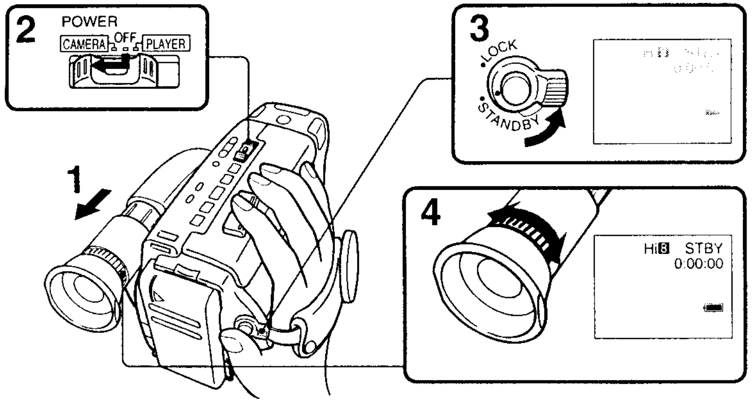
Inserting a Cassette

Make sure that the power source is connected.
(1) While sliding the lid lock, lift up the lid. Then open it. **(2)** Press EJECT. The cassette compartment automatically lifts up and opens. **(3)** Insert a cassette (not supplied) with the window facing out. **(4)** Press the PUSH mark on the cassette compartment to close it. The cassette compartment automatically goes down.
(5) Close the lid.
To eject the cassette, press EJECT.



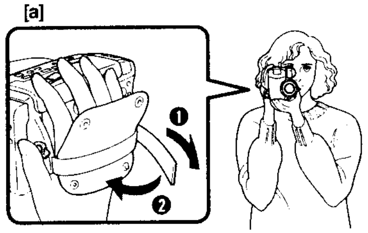
Adjusting the Viewfinder Lens

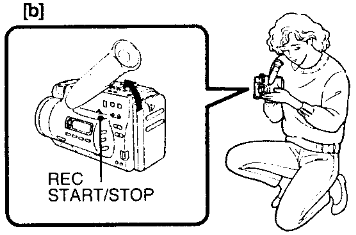
Before you use camcorder for the first time or after someone else has used it, focus the viewfinder lens.
Make sure that the power source is connected to the camcorder.
(1) Pull the viewfinder out until it clicks. **(2)** While pressing the small green button on the POWER switch, slide it to CAMERA. **(3)** Turn STANDBY up. **(4)** Turn the viewfinder lens adjustment ring so that the indicators in the viewfinder come into sharp focus.



Hints for Better Shooting

For hand-held shots, you'll get better results by holding the camcorder according to the following suggestions:

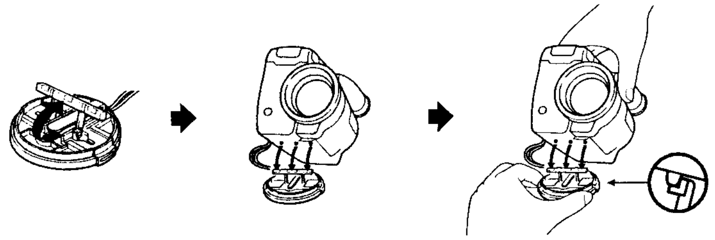




- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls with your thumb. **[a]**
- Place your right elbow against your side.
- Place your left hand under the camcorder to support it.
- Place your eye firmly against the viewfinder eyecup.
- Use the viewfinder frame as a guide to determine the horizontal plane.
- You can also record in a low position to get an interesting recording angle. Turn the viewfinder up for recording from a low position. **[b]**

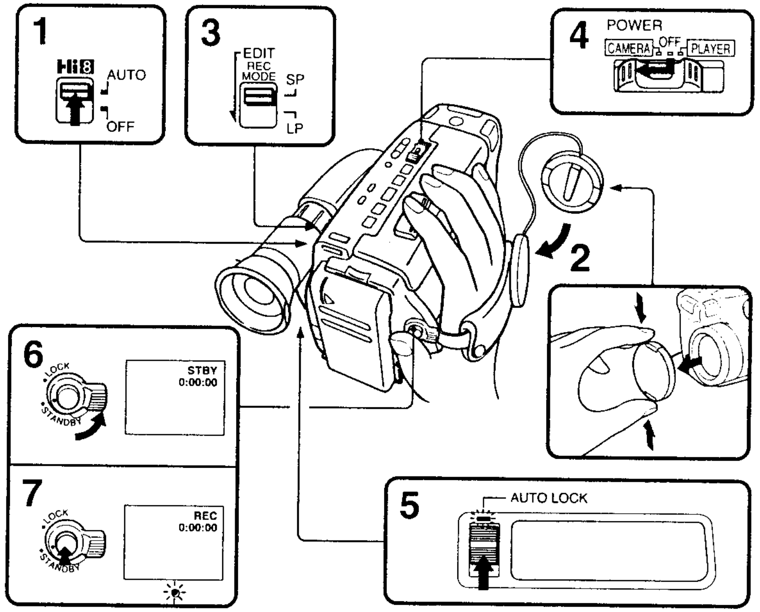
Place the camcorder on a flat surface or use a tripod
Try placing the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder (p.50). Make sure the tripod screw is shorter than 6.5mm (9/32 in).

Use the lens cap as the instant stand
You can use the supplied lens cap as a handy camcorder stand.



Camera Recording

Make sure that a power source is installed and a cassette is inserted. Before you record one-time events, you may want to make a trial recording to make sure that you are using the camcorder correctly.
(1) Slide the Hi8 AUTO/OFF switch to AUTO (p.42). **(2)** Remove the lens cap and clip it on the grip strap. **(3)** Set REC MODE/EDIT to LP (long play) or SP (standard play), according to the length of your planned recording. **(4)** While pressing the small green button on the POWER switch, slide it to CAMERA. **(5)** Slide AUTO LOCK up. The AUTO LOCK lamp (green) lights up. **(6)** Turn STANDBY up. **(7)** Press START/STOP. The camcorder starts recording and the "REC" indicator will appear in the viewfinder.



To Stop Recording Momentarily

Press START/STOP again. The "STBY" indicator appears in the viewfinder (**Standby mode**).

To Finish Recording

Turn STANDBY down and set the POWER switch to OFF.
Then, eject the tape (p.12).

Note on Standby mode
If you leave the camcorder for 5 minutes or more with a cassette inserted in Standby mode, the camcorder goes off automatically. This prevents wearing down the battery and wearing out the tape. To resume Standby mode, turn STANDBY down and turn it up again. To start recording, press START/STOP.

Note on recording
When you record from the beginning of the tape, run the tape for about 15 seconds before actual recording. This prevents the camcorder from missing any start-up scenes when you play back the tape.

Camera Recording

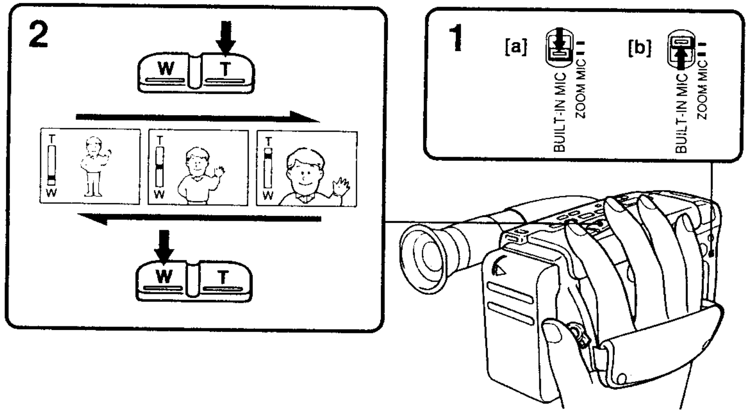
Note on the tape counter
The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press RESET located at the top of the camcorder.

Recording mode
This camcorder records in the SP mode (approximately 20.051 mm/second) and in the LP mode (approximately 10.058 mm/second) and can play back in the SP mode and LP mode. The quality of the playback picture in the LP mode, however, will not be as good as that in the SP mode.

If you wear glasses
You can bend back the eyecup to get a better view of the viewfinder.

Using the Zoom Feature

Zooming is a recording technique that lets you change the size of the subject in the scene. You can also use the zoom to focus manually or to decide on a shooting angle before you start recording. When you zoom in or zoom out, you can also set the sound to "zoom" along with the picture. For more professional-looking recordings, use the zoom sparingly.
T side: for telephoto (subject appears closer)
W side: for wide-angle (subject appears farther away)
(1) Set the BUILT-IN MIC switch: **[a]** To record the usual Hi-Fi stereo sound regardless of zooming, set to the green mark position. **[b]** To make the sound "zoom" along with the picture, set to ZOOM MIC. The "ZOOM MIC" indicator appears in the viewfinder. **(2)** Press the T or W side of the power zoom button.



Zooming Speed
Press the power zoom button firmly for a high-speed zoom. Press it softly for a relatively slow zoom.

When you shoot a subject using a telephoto zoom
If you cannot get a sharp focus while in extreme telephoto zoom, press the W side of the power zoom button until the focus is sharp.
You can shoot a subject that is at least 80 cm (about 2.6 feet) away from the lens surface in the telephoto position, or 1cm (about 1/2 inches) in the wide-angle position.

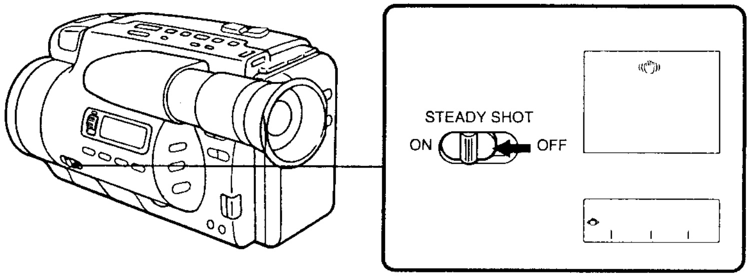
Note on ZOOM MIC
When you "zoom" the sound at the telephoto position, the sound is recorded in monaural.

Manual focusing in macro
You can also shoot with manual focus while doing close-ups (p.27).

Getting a Steady Picture

You can use the Steady Shot function to compensate for camera-shake in the following cases.
- When you zoom in
- When you shoot while moving
- When you shoot from a car window

Set STEADY SHOT to ON. The ((✋)) indicator appears in the viewfinder and in the display window.



To Release the Steady Shot Function

Set STEADY SHOT to OFF.

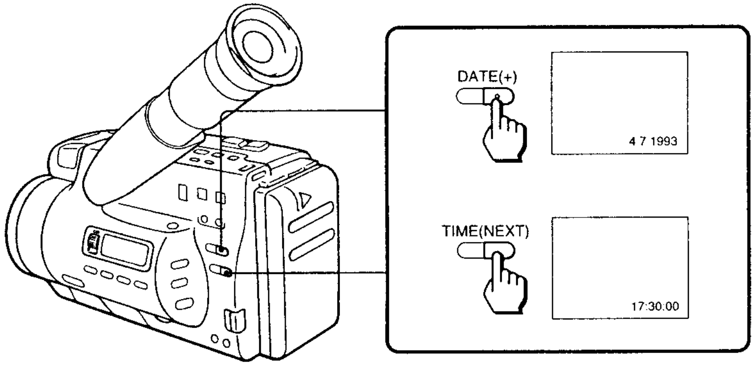
Note on the Steady Shot function
The Steady Shot function will not correct excessive camera-shake.

When you do not need to use the Steady Shot function
Set STEADY SHOT to OFF. You can conserve the battery.

When you shoot stationary object with a tripod
Set STEADY SHOT to OFF.

Recording the Date or Time

During recording or standby, press DATE (+) or TIME (NEXT).
You can record the date or time displayed in the viewfinder with the picture. You cannot record the date and time at the same time. Except for the date or time indicator, no indicator in the viewfinder is recorded.



To Stop Recording with the Date or Time

Press DATE (+) or TIME (NEXT) again. Recording continues.

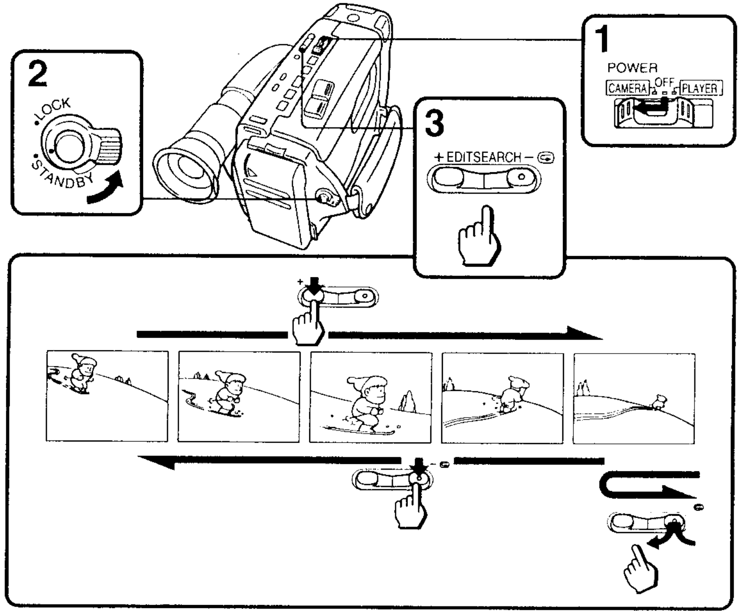
Checking the Recorded Picture in the Viewfinder

Using EDITSEARCH, you can review the last recorded scene or check the recorded picture in the viewfinder. **(1)** While pressing the small green button on the POWER switch, slide it to CAMERA. **(2)** Turn STANDBY up. **(3)** Press EDITSEARCH. Press the – (⊜) side momentarily, the last few seconds of the recorded portion plays back (**Rec. Review**).

Keep pressing EDITSEARCH to play back the last recorded portion (**Edit Search**).

+ side: to view the forward playback picture

– side: to view the reverse playback picture



Monitoring the Sound While Viewing the Playback Picture in the Viewfinder

Connect headphones (not supplied) to the PHONES jack. While pressing the small green button on the POWER switch, slide it to PLAYER, and play back the tape (p.21).

To Stop Playback

Release EDITSEARCH.

To Begin Re-recording

Press START/STOP. Re-recording begins from the point you released EDITSEARCH. Provided you do not eject the tape, the transition between the last scene you recorded and the next scene you record will be smooth.

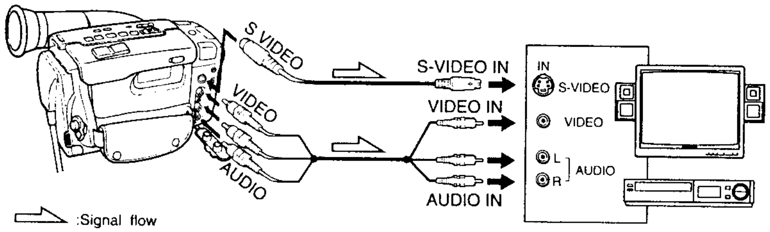
Connections for Playback

You can use this camcorder as a VCR by connecting it to your TV for playback. There are two ways to connect your camcorder.

- Connecting to a TV with Video/Audio input jacks or a VCR
- Connecting to a TV without Video/Audio input jacks

Connecting to a TV with Video/Audio Input Jacks or a VCR

Connect the camcorder to your TV by using the supplied connecting cable. Set the TV/VCR selector to VCR on the TV. When Connecting the camcorder to VCR, set the input selector on the VCR to LINE.

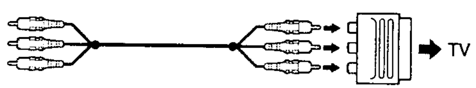


If your TV or VCR is a monaural type, connect only the white plug for audio on both the camcorder and the TV or the VCR. With this connection, the sound is in monaural.

If you are going to connect the camcorder using the S video cable, you do not need to connect the yellow (video) plug of the A/V connecting cable.

If your TV has a 21-pin connector (EUROCONNECTOR)

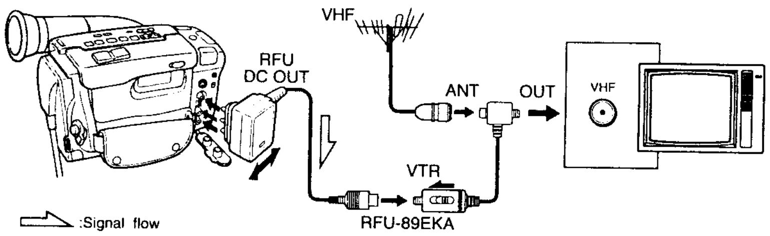
Use the supplied 21-pin adaptor.



Connecting to a TV without Video/Audio Input Jacks

Connect the camcorder to the TV using an appropriate RFU adaptor such as the RFU-89EKA (not supplied). For details on connection, refer to the instruction manual of the RFU adaptor.

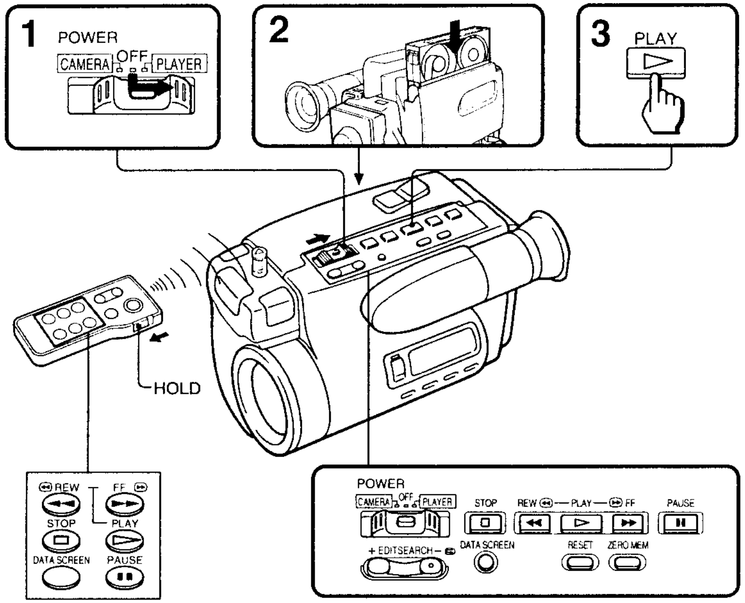
The following illustrates the connection of the RFU-89EKA as an example.



Playing Back a Tape

You can monitor the playback picture in the viewfinder. You can also monitor on the TV screen, after connecting the camcorder to the TV/VCR (p.20).

(1) While pressing the small green button on the POWER switch, slide it to PLAYER. **(2)** Insert the recorded tape with the window facing out. **(3)** Press ▷. Playback starts.



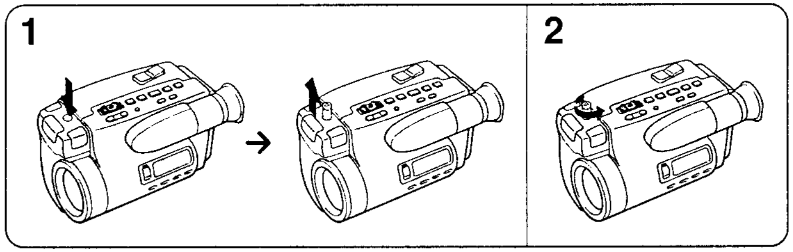
To stop playback, press □.
To rewind the tape, press ◀◀.
To advance the tape rapidly, press ▶▶.

See next page for further information.

Playing Back a Tape

Using the Remote Commander

You can control playback using the supplied Remote Commander.
Before using the Remote Commander, insert the lithium battery, slide the HOLD switch in the direction opposite to the arrow. Pop out the remote sensor of the camcorder.
(1) Push the head of the remote sensor lightly. The remote sensor pops up. **(2)** Aim the remote sensor in the direction you want to point the Remote Commander at (p.52).



Various Playback Modes

To view a still picture (playback pause)
Press ❚❚ during playback. To resume playback, press ❚❚ or ▷.

To locate a scene (Picture Search)
Keep pressing ◀◀ or ▶▶ during playback. To resume normal playback, release the button.

To monitor the high-speed picture during fastforward or rewind (Skip Scan)
Keep pressing ◀◀ while rewinding or ▶▶ while advancing the tape. To resume normal playback, press ▷.

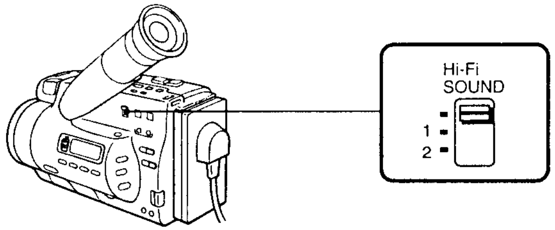
To view the picture in a sequence of stop-motion images
Press EDITSEARCH in playback pause mode. If you keep pressing EDITSEARCH, you can view the picture playback in the forward (+) or reverse (–) direction.

Notes on playback
- Streaks appear and the sound is muted in the various playback modes.
- When still picture mode lasts for 5 minutes or more, the camcorder automatically enters stop mode.

To display the viewfinder screen indicators on the TV
Press DATA SCREEN.
To erase the indicators, press DATA SCREEN again.

To Select the Monitor Sound

Normally set Hi-Fi SOUND to the green mark position.
- When you play back an AFM monaural sound recorded tape, set to the green mark position.
- When you playback a dual soundtrack tape, set to "1" or "2".



Displaying the Recording Date or Time — Data Code Function

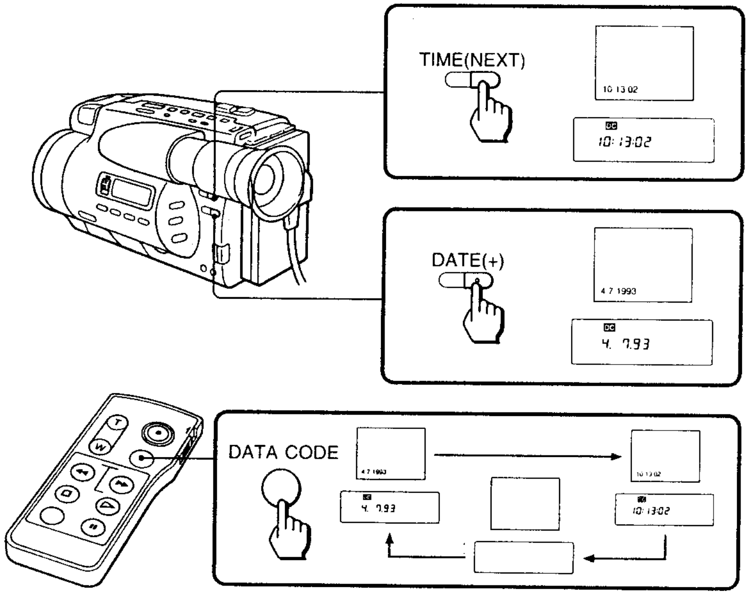
Even if you did not record date or time when you were recording, you can display the recording date or time (Data Code) on the TV during playback or editing. The data code is also displayed in the viewfinder and the display window.

To Display the Recording Date

Press DATE (+) on the camcorder, or press DATA CODE on the Remote Commander. To make the date disappear, press DATE (+) again or DATA CODE twice.

To Display the Recording Time

Press TIME (NEXT) on the camcorder, or press DATA CODE on the Remote Commander twice. To make the time disappear, press it again.



When bars (-:--:--) appear
- A blank portion of the tape is being played back.
- The tape was recorded by a camcorder without the data code function.
- The tape was recorded by a camcorder without having date and time set.
- The tape is unreadable due to tape damage or noise.

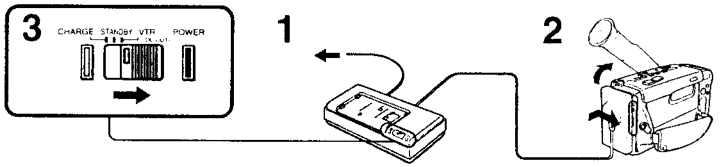
Using Alternate Power Sources

You can choose any of the following power sources for your camcorder: battery pack (p.5), house current, alkaline batteries, and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

Place	Power source	Accessory to be used
Indoors	House current	AC power adaptor AC-V35/V35A (supplied), AC-S10
Outdoors	Battery pack	Battery pack NP-55H (supplied), NP-77HD, NP-77H, NP-66H
	Alkaline batteries	Battery case EBP-77
In the car	12 V or 24 V car battery	DC pack DCP-77

Using House Current

To use the supplied AC-V35/V35A AC power adaptor:
(1) Connect the AC power adaptor to a wall outlet. **(2)** Lift up the viewfinder. Align the right side of the connecting plate with the white line on the camcorder, then slide the connecting plate in the direction of the arrow. **(3)** Set the selector of the AC power adaptor to the "VTR (DC OUT)" position. The green lamp lights up.



Note on the POWER lamp
The POWER lamp will remain lit for a while even if the unit is unplugged after using. This is normal.

To remove the AC power adaptor
The connecting plate of the AC power adaptor is removed in the same way as the battery pack (p.6).

Using Alkaline Batteries

Use the EBP-77 battery case (not supplied) with 12 R6 (AA) size alkaline batteries (not supplied). Insert the batteries in the battery case, and attach the battery case to the battery mounting surface of the camcorder.

To remove the battery case
The battery case is removed in the same way as the battery pack (p.6).

Using a Car Battery

Use the DCP-77 DC pack (not supplied). Connect the cord of the DC pack to the cigarette lighter socket of the car (12 V or 24 V). Connect the DC pack to the battery mounting surface of the camcorder.

To remove the DC pack
The DC pack is removed in the same way as the battery pack (p.6).

Options for Charging the Battery Pack

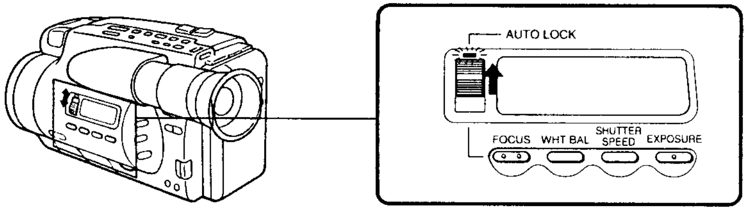
AC-S10 AC power adaptor:
You can charge a battery pack whether it is used up or not with this adaptor because it has a discharging function.

Selecting Automatic or Manual Adjustment Modes

The camcorder's automatic functions offer you worry-free operation under most shooting conditions. But in some circumstances, manual adjustment is better for creative recording.

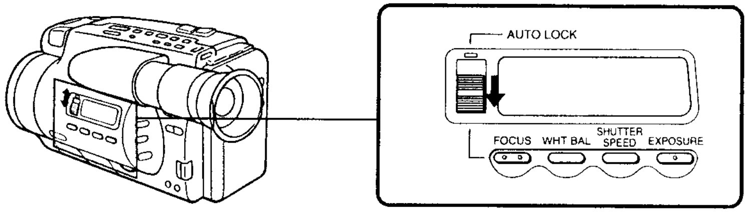
Automatic Adjustment Mode

Slide AUTO LOCK up. The AUTO LOCK lamp (green) lights up. In AUTO LOCK mode, the camcorder adjusts the focus, white balance and exposure automatically. It also sets the shutter speed to 1/50.



Manual Adjustment Mode

Slide AUTO LOCK down. The AUTO LOCK lamp goes off. In manual mode, you can adjust the focus, white balance, exposure, and shutter speed manually.
Even if in manual mode, the settings you didn't adjust manualy remain the same as when in automatic adjustment mode.



About the previous settings
Manual settings are saved in the following case:

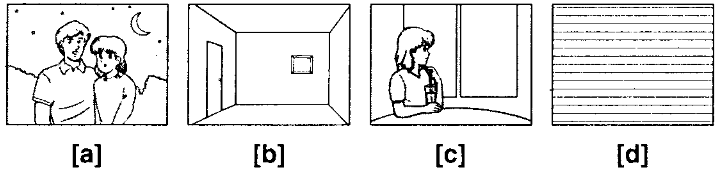
- When you resume automatic mode after you make manual adjustments and then select manual mode again
- When you set the POWER switch to OFF

However, manual settings are canceled if more than 5 minutes pass after you have detached the battery.

Focusing Manually

When to Use Manual Focus

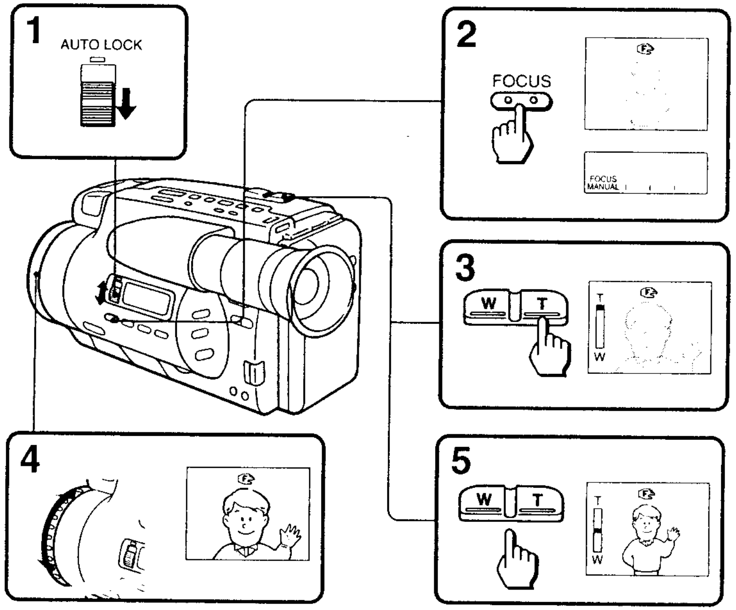
Use manual focus under the following conditions:



- Insufficient light **[a]**
- Subjects with little contrast – walls, sky, etc. **[b]**
- Too much brightness behind the subject **[c]**
- Horizontal stripes **[d]**
- Subjects through frosted glass
- Subjects beyond nets, etc.
- Bright subject or subject reflecting light
- Shooting a stationary subject when using a tripod

Focusing Manually

When focusing manually, first focus in telephoto before recording, and then reset the shot length.
(1) Slide AUTO LOCK down. **(2)** Press FOCUS. The Ⓕ indicator appears in the viewfinder and the FOCUS MANUAL indicator appears in the display window. **(3)** Keep pressing the T side of the power zoom button until the zooming stops. **(4)** Turn the focus ring to adjust the focus. **(5)** Set the desired shot length.



To Reactivate Auto Focusing

Press FOCUS again, or slide AUTO LOCK up. The Ⓕ indicator in the viewfinder disappears.

Shooting in relatively dark places
Shoot at wide angles after focusing in telephoto.

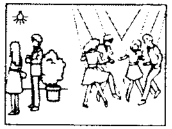
Note on the focus ring
The focus ring does not have a stop position.

Adjusting the White Balance

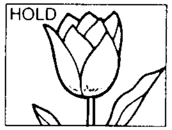
White balance is the adjustment to make white subjects look white and to obtain a more natural colour balance.

Selecting the Appropriate Mode

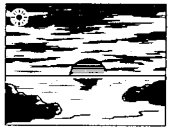
Select the appropriate white balance mode under the following conditions:



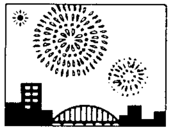
[a]



[b]



[c]



[d]

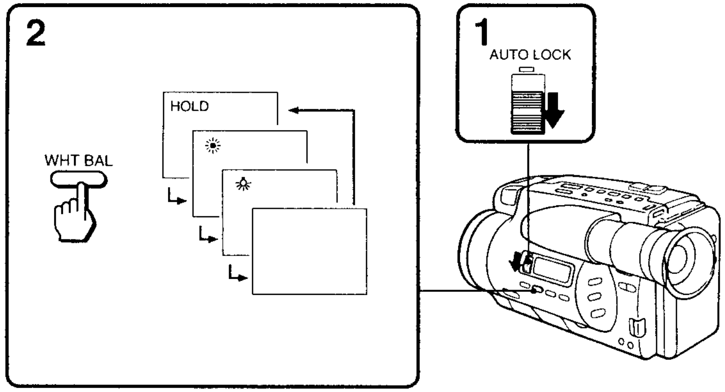
Indoor mode
- Lighting condition changes quickly. **[a]**
- Too bright place such as photography studios
- Under sodium lamps or mercury lamps

HOLD Hold mode
- Monochromatic subject or background **[b]**

Outdoor mode
- Under a colour matching fluorescent lamp
- Recording a sunset/sunrise, just after sunset, just before sunrise **[c]**, neon signs, or fireworks **[d]**

Setting White Balance Mode

(1) Slide AUTO LOCK down. **(2)** Press WHT BAL repeatedly so that the desired mode indicator appears in the viewfinder.



To Return to Automatic White Balance Mode

Press WHT BAL repeatedly until the white balance indicator disappears, or slide AUTO LOCK up.

Locking the White Balance Setting (HOLD mode)

When you set the white balance to HOLD mode, the last automatic white balance setting will be locked and maintained even if lighting conditions change.
(1) Slide AUTO LOCK up. **(2)** Point the camcorder at a white and flat object such as a white wall or paper for about 15 seconds. **(3)** Slide AUTO LOCK down. **(4)** Press WHT BAL repeatedly so that the HOLD indicator appears in the viewfinder.

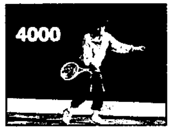
Note on the HOLD mode setting
When you detach the battery or change white balance mode, the setting you made for HOLD mode is canceled.

Setting the Shutter Speed

You can record a fast-moving subject at a high shutter speed.
This enables you to view the movement clearly in freeze frame when you play back the tape with an 8 mm player that has the clean still function. When using a high shutter speed, you must maintain a sufficient light level.

Selecting the Appropriate Shutter Speed

Select the appropriate shutter speed, referring to the following examples:



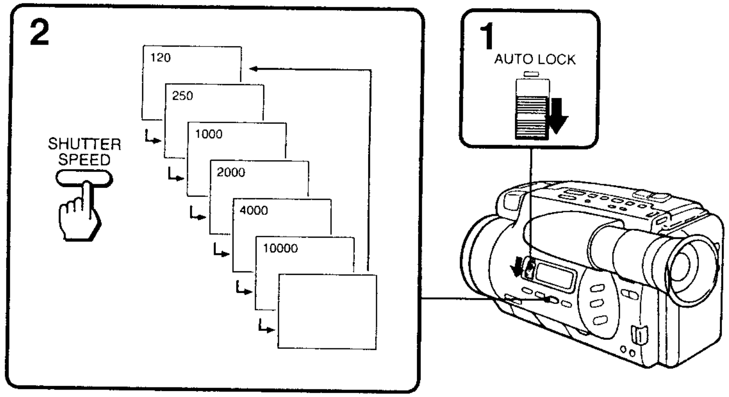
1/10000, 1/4000, or 1/2000 seconds
- On clear days, recording a golf or tennis swing (to view the hit ball clearly in the still picture, set to 1/4000 or 1/10000)
- Recording skiers

1/1000 or 1/250 seconds
- On overcast days, recording a moving merry-go-round or roller coaster
- Recording a scenery from a car window

1/120 seconds
- Instead of the ND2 filter (to reduce the exposure level to about half)
- Recording indoor sports

Setting the Shutter Speed

(1) Slide AUTO LOCK down. **(2)** Press SHUTTER SPEED repeatedly so that the desired shutter speed indicator appears in the viewfinder.



To Return to Normal Shutter Speed (1/50)

Press SHUTTER SPEED repeatedly until the shutter speed indicator disappears, or slide AUTO LOCK up.

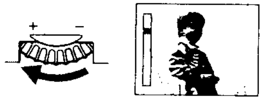
When using a high shutter speed
You must maintain a sufficient light level.

Adjusting the Exposure

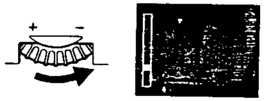
When to Adjust the Exposure

Adjust the exposure manually under the following cases.

[a]



[b]

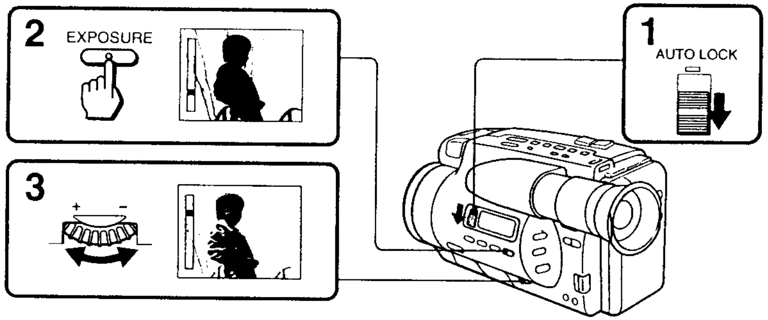


[a] Turn the Exposure dial to + when:
- The background is too bright (back lighting)
- Insufficient light: most of the picture is dark

[b] Turn the Exposure dial to – when:
- Bright subject and dark background
- To record the darkness faithfully

Adjusting the Exposure

(1) Slide AUTO LOCK down. **(2)** Press EXPOSURE. The exposure indicator appears in the viewfinder and the exposure is locked at the actual brightness. **(3)** Turn the EXPOSURE dial to adjust exposure. The exposure is locked at the adjusted brightness.



To Return to Automatic Exposure Mode

Press EXPOSURE again, or slide AUTO LOCK up.

Shoot with the sun behind you
When the light source is behind your subject, or in the following situations, the subject will be recorded too dark.
- The subject is indoors and there is a window behind the subject.
- Bright light sources are included in the scene.
- When shooting a person wearing white or shiny clothes in front of a white background, the face will be recorded too dark.

When shooting in the dark
We recommend you to use the video light (not supplied). To get the best colour, you must maintain a sufficient light level.

Fade-in and Fade-out

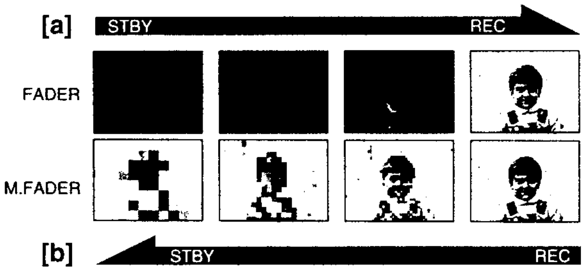
You can fade in or fade out to give your recording a professional appearance. When fading in, the picture will gradually appear from black or mosaic. The sound will also gradually increase. When fading out, the picture will gradually fade to black or mosaic. The sound will also decrease.

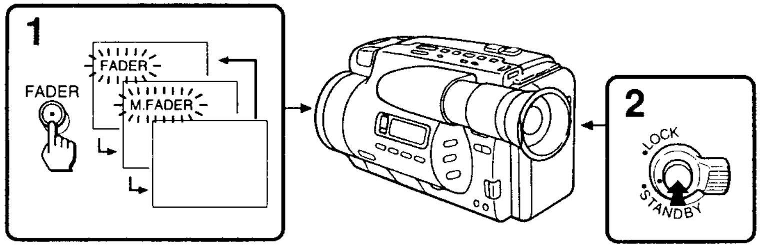
When Fading in [a]

(1) During the camcorder is in Standby mode, press FADER. The FADER indicator starts flashing. **(2)** Press START/STOP to start recording. The FADER indicator stops flashing.

When Fading out [b]

(1) During recording, press FADER. The FADER indicator starts flashing. **(2)** Press START/STOP to stop recording. The FADER indicator stops flashing.





To Cancel the Fade-in/out Function

Before pressing START/STOP, press FADER once or twice until you have neither the FADER nor M.FADER indicator in the viewfinder.

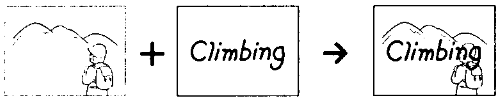
When the date or time indicator is displayed

The date or time does not fade in nor fade out.

Superimposing a Title

You can superimpose your title such as a hand-written message or illustration over the picture while you are recording.

- You can store one title.
- You cannot superimpose a title on the tape already recorded.
- Before superimposing, store the title.



Step to Superimpose a Title

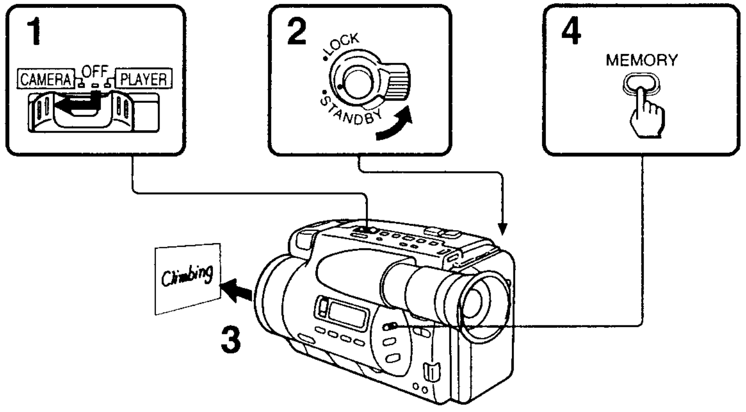
Store a title. → Select the title display mode and colour. → Superimpose the title.

Note on making a title card

Use a plain, white card and draw the title in thick, dark letters.

Storing a Title

Before storing a title, make sure a power source and lithium battery are installed.
(1) While pressing the small green button on the POWER switch, slide it to CAMERA. **(2)** Turn STANDBY up. **(3)** Point the camcorder to the title card and adjust the focus. **(4)** Press MEMORY. The title is stored.
To make the title disappear, press SUPERIMPOSE ON/OFF.



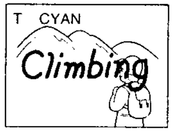
To Check the Title

Press SUPERIMPOSE ON/OFF in Standby mode.

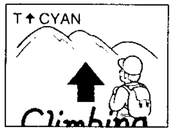
Selecting the Display Mode and Title Colour

You can scroll the title like scrolling credits in the movies or reverse the title. 8 colours are available for the title.

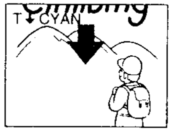
[a]



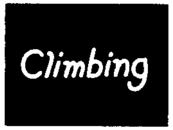
[b]



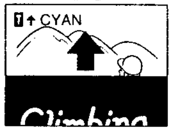
[c]



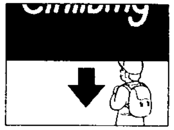
[d]



[e]



[f]

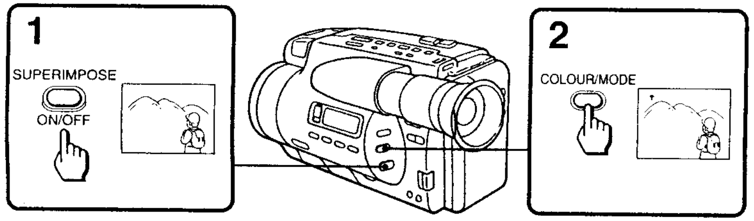


[a] Normal display (no indicator)
[b] Scrolling up the title ↑
The title scrolls up and stops at the center, then disappears scrolling up.
[c] Scrolling down the title ↓
The title scrolls down and stops at the center, then disappears scrolling down.
[d] Reversing the title with the picture 🆃
[e] Scrolling up the reversed title 🆃↑
[f] Scrolling down the reversed title 🆃↓

To Select the Display Mode

(1) Press SUPERIMPOSE ON/OFF to make the title disappear. **(2)** Press COLOUR/MODE until the display mode indicator you want appears. Each time you press COLOUR/MODE, the indicator changes:

No indicator → ↑ → ↓
↑ ↓
🆃↓ ← 🆃↑ ← 🆃

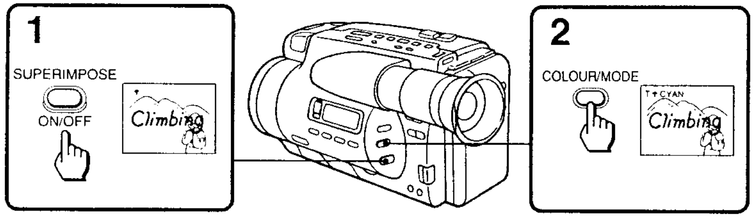


Superimposing a Title

To Select the Title Colour

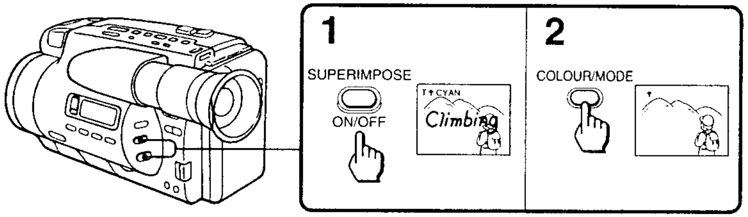
(1) Press SUPERIMPOSE ON/OFF to display the title. **(2)** Press COLOUR/MODE until the colour indicator you want appears. Each time you press COLOUR/MODE, the indicator changes:

WHT (white) → BLUE → GRN (green) → CYAN
↑ ↓
BLK (black) ← YEL (yellow) ← VIO (violet) ← RED



Superimposing the Title

Before superimposing the title, set the camcorder in Standby mode and select the title display mode.
(1) Press SUPERIMPOSE ON/OFF when you want to insert the title during recording. The title appears.
(2) When you want to make the title disappear, press SUPERIMPOSE ON/OFF again.



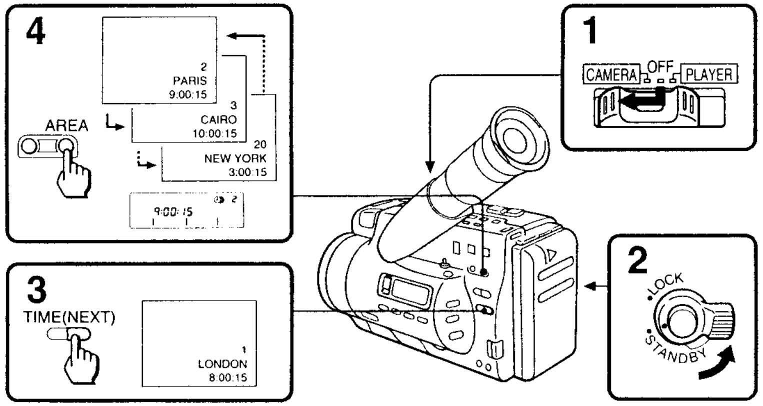
Function of the COLOUR/MODE button
When the title is displayed, this button functions as the colour selection button.
When the title is not displayed, this button functions as the display mode selection button.

Note on the colour and display mode indicators
The colour and display mode indicators in the viewfinder are not recorded.

Using the World Clock

Before using the world clock, you need to set the date and time in your home area (p.11). Reset the clock according to the local time zone by pressing AREA. First, find the area name in the "Time Zone Chart" on page 38.

(1) While pressing the small green button on the POWER switch, slide it to CAMERA. **(2)** Turn STANDBY up. **(3)** Press TIME (NEXT). The setting of time appears. **(4)** Press AREA to select the area name where you will use the camcorder. The ⊕ indicator appears in the display window.

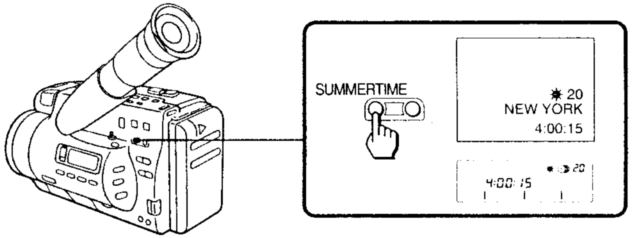


To Check the Date

Press DATE (+). To turn off the date indicator, press DATE (+) again.

To Adjust to Summer Time

Press SUMMERTIME. The ✻ indicator appears and the time changes to summer time. To reset to standard time, press SUMMERTIME again.



To Reset to Your Home Area Time Again

Press AREA until your home area name appears.

Using the Tape Counter

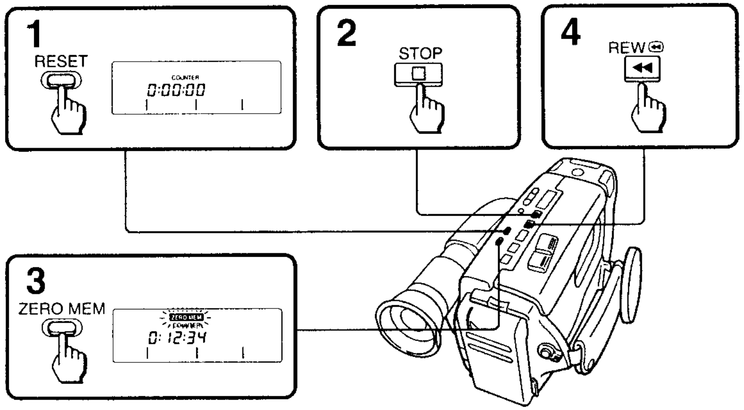
During recording or playback, the digits on the tape counter indicate the elapsed recording or playback time.

Referring to the Amout of Elapsed Time and a Particular Point

Press RESET at the beginning of the tape. The counter in the viewfinder and the display window shows "0:00:00". The counter shows the elapsed time so that you can refer to the amount of elapsed time. You can also use the counter as an index to find a particular point.

Returning to a Pre-registered Position

You can easily go back to the desired point on a tape after playback.
(1) During playback, press RESET at the point you later want to locate. The counter shows "0:00:00" in the viewfinder and the display window. **(2)** Press □ when you want to stop playback. **(3)** Press ZERO MEM to stop rewinding at the counter's zero point. The "ZERO MEM" indicator flashes in the viewfinder and the display window. **(4)** Press ◀◀. The tape stops automatically when the counter reaches approximately zero.



Notes on the tape counter

- Something must be recorded on the tape in order for the tape counter to function. Tape counter does not work on a blank tape.
- There may be a discrepancy of several seconds from the actual time.

Notes on ZERO MEM

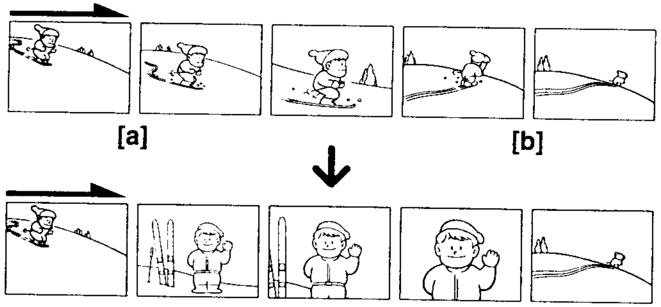
- When you press ZERO MEM, the counter's zero point is memorized.
- This function is canceled automatically once the tape is rewound or sent forward to the point you pre-registered.
- Be sure to press ZERO MEM after stopping the tape. It does not function during recording or playing back.

Using this Function in Reverse

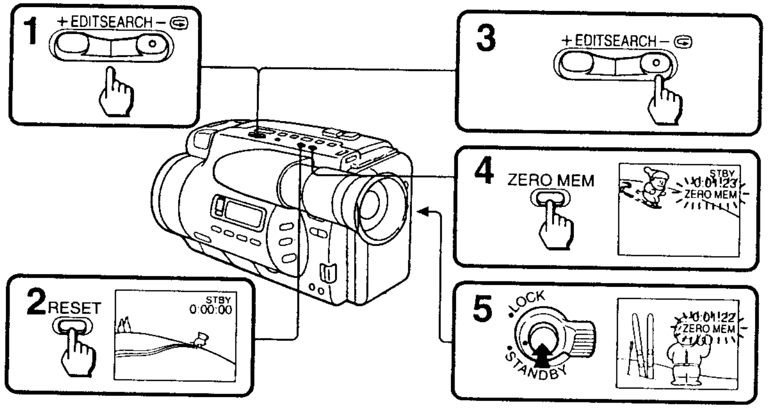
You can return to a desired position after rewinding with this function. Press RESET at the point you want to return to later. Press ◀◀. Press □ when you want to stop rewinding. Press ZERO MEM. Press ▶▶. The tape automatically stops near the zero point you first set.

Inserting a Scene in the Middle of a Recorded Tape

You can insert a scene in the middle of a recorded tape by setting the starting point and ending point. A previously recorded portion will be erased.



(1) While looking in the viewfinder in Standby mode, keep pressing the + or – side of EDITSEARCH and release the button where you want to end the insertion [b]. **(2)** Press RESET to set the counter to zero. **(3)** While looking in the viewfinder, keep pressing the – side of EDITSEARCH and release the button where you want to start the insertion [a]. **(4)** Press ZERO MEM to stop recording of insert at the counter's zero point. **(5)** Press START/STOP. Insert recording begins. The insert recording stops automatically at the counter zero point.



Canceling the ZERO MEM

Press ZERO MEM. The ZERO MEM indicator disappears.

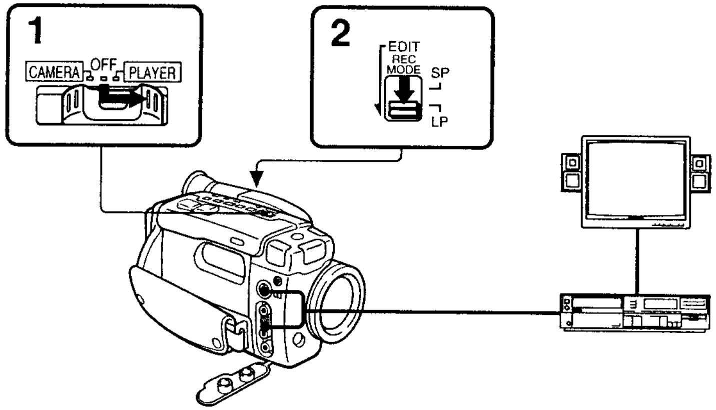
Note on the recorded picture
The picture may be distorted at the ending point when played back.

Editing onto Another Tape

You can create your own video programme by editing with any other 8 8 mm, Hi8 Hi8, β Betamax, VHS VHS, S-VHS S-VHS, VHS-C VHSC, or S-VHS-C S-VHSC VCR that has video/audio inputs.

Before Editing

After connecting the camcorder to a TV via a VCR (p.20),
(1) While pressing the small green button on the POWER switch, slide it to PLAYER. **(2)** Set REC MODE/EDIT in the direction of the arrow.



Starting Editing

(1) Insert a blank tape (or a tape you want to record over) into the recording VCR. Then insert your recorded tape into the camcorder. **(2)** Play back the recorded tape on the camcorder until you locate the point where you want to start editing. Then set the camcorder to playback pause mode. **(3)** Set the recording VCR to recording pause mode. **(4)** Press ❚❚ on the camcorder and VCR simultaneously to start editing.

To Edit More Scenes

Repeat steps 2 to 4.

To Stop Editing

Press ☐ STOP on the camcorder and VCR. When you finish editing, set REC MODE/EDIT in the direction opposite to the arrow.

Use of the EDITSEARCH button
To play back a tape in the forward or reverse direction keep pressing EDITSEARCH during playback pause. You can play back still pictures successively at specific intervals by pressing EDITSEARCH intermittently.

Note on the DATA SCREEN function
If you have displayed the viewfinder screen indicators on the TV (DATA SCREEN function), erase the indicators by pressing DATA SCREEN so that they will not be superimposed on the edited tape.

Displaying the recording date and time
You can display the recording date and time using the Data Code function (p.23). The date and time are not recorded on the edited tape as the data code signal is not output from the S VIDEO or VIDEO jack of the camcorder.

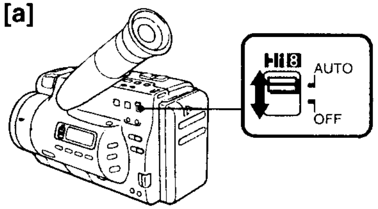
Usable Cassettes and Recording/Playback Modes

Selecting Cassette Types

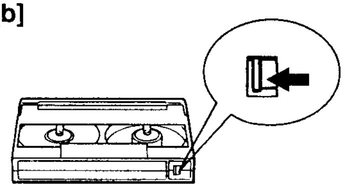
This Hi8 system is an extension of the standard 8 mm system, and was developed for higher-quality pictures. You can use Hi8 video and standard 8 mm cassettes. When you want to record in the Hi8 system, use only Hi8 video cassettes. You cannot record on standard 8 mm cassettes in the Hi8 system.
If you are going to play back the tape using a standard 8 mm video recorder/player, you should record the tape in the standard 8 mm system.
If you want to use a Hi8 cassette with the standard 8 mm recording system, set Hi8 AUTO/OFF **[a]** to OFF.

To play back in	Record using cassette type	Set Hi8 AUTO/OFF to
Hi8	**Hi8**	AUTO
Standard 8	**Hi8**	OFF
	8	AUTO (or OFF)

[a]



[b]



To Prevent Accidental Erasure

Slide the tab **[b]** on the cassette to expose the red mark.
If you try to record with the red mark exposed, the ⊡ and ▲ indicators flash in the viewfinder and the display window, and you cannot record on the tape. To re-record on this tape, slide the tab back out to cover the red mark.

When You Play Back

The playback mode is selected automatically according to the recording system (Hi8/standard 8 mm, SP/LP mode) in which the tape was recorded.

Notes on AFM Hi-Fi stereo
When you play back the tape, the sound is in monaural if:

- You record the tape using this camcorder, then play it back on an AFM Hi-Fi monaural video recorder/player.
- You record the tape on an AFM Hi-Fi monaural video recorder, then play it back on this camcorder.

Recording mode
When you play back a tape, the SP/LP indicator in the viewfinder shows the recording mode SP/LP.

RC time code
The camcorder automatically marks the RC time code during recording, but cannot display the RC time code. When you want to display the RC time code, use the other video equipment with the RC time code displaying function.

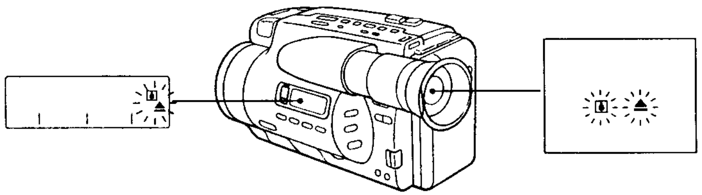
Maintenance Information and Precautions

Moisture Condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. If this happens, the tape may stick to the head drum and be damaged or the camcorder may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. However, take the following precautions.

Inside the Camcorder

When ▣ and ▲ indicators flash in the viewfinder and the display window, moisture has condensed inside the camcorder. If this happens, none of the functions except cassette ejection will work.
Eject the tape, turn off the camcorder, and leave it with the cassette compartment open for about 1 hour.
If the ▣ indicator does not light up when you turn on the power, you can use the camcorder again.



On the Surface of the Tape

If there is moisture on the surface of the tape, when you insert tape and press a tape transport button, the ▲ indicator flashes in the viewfinder and the display window. If this happens, none of the functions except cassette ejection will work.
Eject the tape and let it sit for about 1 hour.
If the ▲ indicator does not light up when you insert the tape and press a tape transport button, you can use the camcorder again.

On the Lens

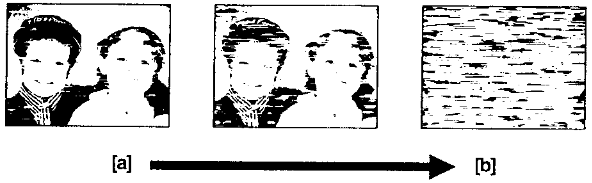
No indicator will appear, but the picture becomes dim. Turn off the power and do not use the camcorder for about 1 hour.

How to Prevent Moisture Condensation

When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.
(1) Be sure to tightly seal the plastic bag containing the camcorder.
(2) Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about 1 hour).

Video Head Cleaning

To ensure clear pictures, clean the video heads periodically. When playback pictures are "noisy" or hardly visible, the video heads may be contaminated.



[a] Slight contamination
[b] Critical contamination

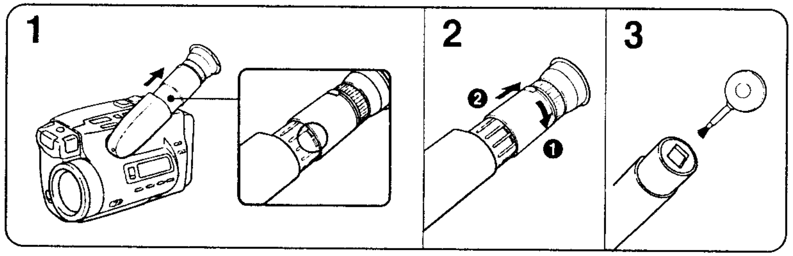
If this happens, clean the video heads with the Sony V8-25CLH cleaning cassette (not supplied). After checking the picture, if it is still "noisy", repeat cleaning. (Do not repeat cleaning more than 5 times.)

Caution
Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note
If the V8-25CLH cleaning cassette is not available in your area, consult your Sony service facility.

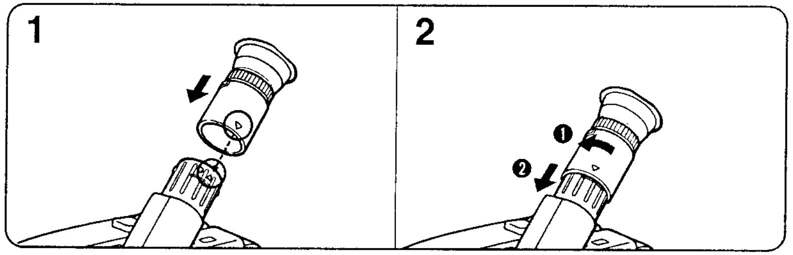
Removing Dust from inside the Viewfinder

(1) Pull out the viewfinder barrel until the illustrated mark appears. **(2)** Turn it counterclockwise until it stops and pull it out. **(3)** Clean the surface of the cover with a blower brush.



To Reattach the Viewfinder Barrel

(1) Align the mark on the viewfinder barrel with the mark on the viewfinder and push in the viewfinder barrel until it clicks. **(2)** Turn it clockwise until it stops and push it in.

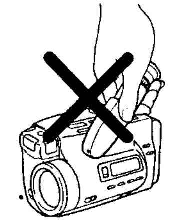


Precautions

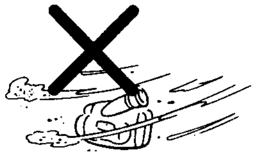
On Camcorder Operation

- Operate the camcorder using 6.0 V (battery pack), 7.5 V (AC power adaptor), or 9.0 V (alkaline batteries).
- For DC or AC operation, use only the accessories recommended in this manual.
- Should any solid object or liquid fall into the casing, unplug the camcorder and have it checked by qualified personnel before operating it any further.
- Do not pick up the camcorder by the viewfinder. **[a]**
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF when not using the camcorder.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.
- **Do not let sand get into the camcorder. When you use the camcorder on a sandy beach or dusty place, protect it from the sand or dust. Sand or dust may cause the unit to malfunction and sometimes the malfunction cannot be repaired. [b]**
- **Do not let the camcorder get wet. Keep the camcorder from rain or sea water. It may cause a malfunction and sometimes the malfunction cannot be repaired.[c]**

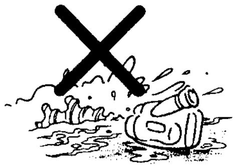
[a]



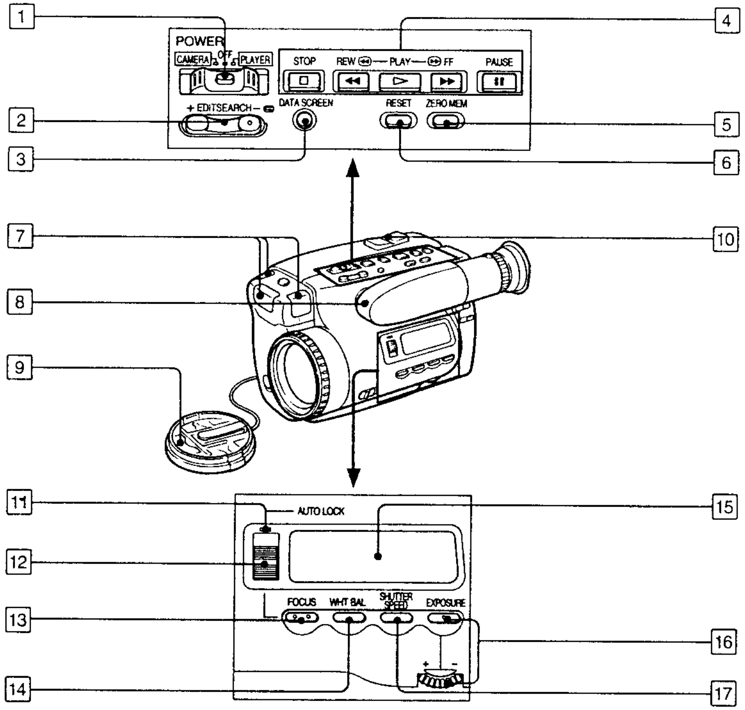
[b]



[c]



Identifying the Parts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12
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14
15
16
17
POWER
CAMERA
OFF
PLAYER
STOP
REW
PLAY
FF
PAUSE
+ EDITSEARCH –
DATA SCREEN
RESET
ZERO MEM
AUTO LOCK
FOCUS
WHT BAL
SHUTTER SPEED
EXPOSURE
+
–

1 **POWER switch (p.11, 15, 21)**

2 **EDITSEARCH button (p.19, 40)**

3 **DATA SCREEN button (p.22)**

4 **Tape transport buttons (p.21, 22)**
▷ PLAY (playback)
▶▶ FF (fast forward)
◀◀ REW (rewind)
□ STOP
❚❚ PAUSE

5 **ZERO MEM (zero memory) button (p.39, 40)**

6 **RESET button (p.39, 40)**

7 **Built-in Microphone (stereo/zoom)**

8 **Recording/battery lamp**

9 **Lens cap (p.14, 15)**

10 **Power zoom button (p.16, 27)**

11 **AUTO LOCK lamp (p.15, 25)**

12 **AUTO LOCK switch (p.15, 25)**

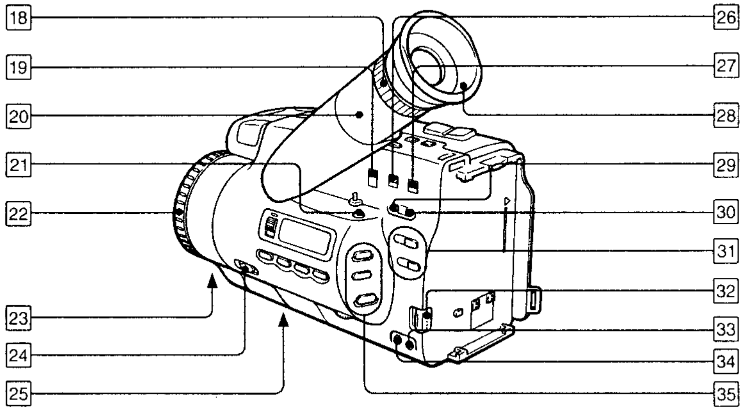
13 **FOCUS button (p.27)**

14 **WHT BAL (white balance) button (p.29)**

15 **Display window (p.51)**

16 **EXPOSURE button and dial (p.32)**

17 **SHUTTER SPEED button (p.31)**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18 **Viewfinder lens adjustment ring (p.13)**

19 **Hi-Fi SOUND switch (p.22)**

20 **Viewfinder (p.51)**

21 **REC START/STOP button (p.14)**

22 **Focus ring (p.27)**

23 **FADER button (p.33)**

24 **STEADY SHOT switch (p.17)**

25 **Lithium battery compartment (p.9)**

26 **REC (recording) MODE/EDIT switch (p.15, 41)**

Mode	Recording	Playback	Editing
Setting	EDIT REC MODE SP LP	EDIT REC MODE SP LP	EDIT REC MODE SP LP
Function	Recording mode switch	EDIT switch	

27 **Hi8 AUTO/OFF switch (p.15, 42)**

28 **Eyecup (p.14)**

29 **SUMMERTIME button (p.11, 37)**

30 **AREA button (p.37)**

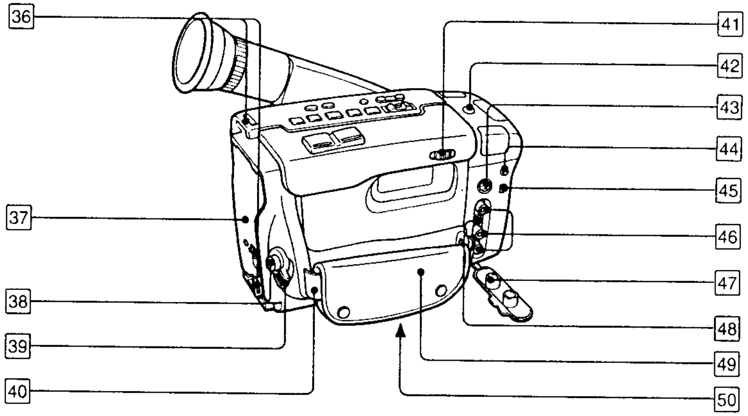
31 **DATE(+) and TIME(NEXT) buttons (p.11, 18, 23, 37)**

32 **BATT (battery eject) knob (p.6)**

33 **PHONES (headphones) jack (stereo minijack) (p.19)**

34 **Ⓛ REMOTE control jack (mini-mini-jack)**
Ⓛ stands for Local Application Control Bus System. The Ⓛ control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the connectors indicated as CONTROL L or REMOTE.

35 **SUPERIMPOSE buttons (p.34, 35, 36)**
MEMORY button
COLOUR/MODE button
SUPERIMPOSE ON/OFF button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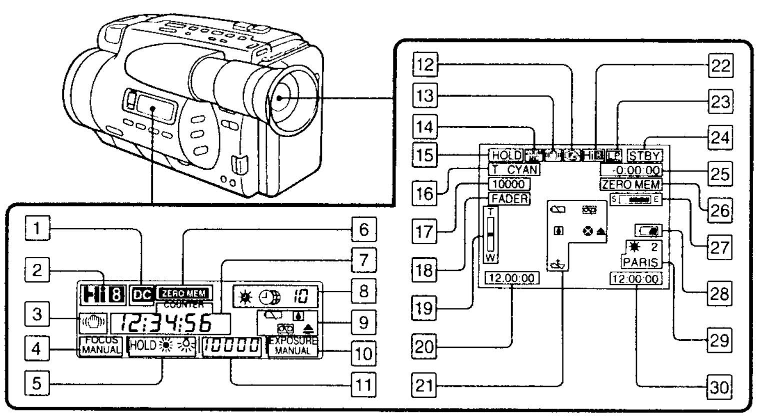
- **36** Hooks for shoulder strap (p.53)
- **37** Battery mounting surface (p.6)
- **38** START/STOP button (p.15)
- **39** STANDBY switch (p.11, 15)
- **40** Grip strap (p.14)
- **41** Lid lock (p.12)
- **42** Remote control sensor (p.52)
- **43** S VIDEO input/output jack (p.20)
- **44** MIC jcak (PLUG IN POWER) (stereo mini jack)
  Connect an external stereo microphone (not supplied).
- **45** BUILT-IN MIC switch (p.16)
- **46** VIDEO/AUDIO input/output jacks (phono jacks) (p.20)
- **47** Jack cover
- **48** RFU DC OUT (RFU adaptor DC output) jack (p.20)
- **49** Grip strap cover
- **50** Tripod receptacle (p.14)

Indicators in the Display Window and the Viewfinder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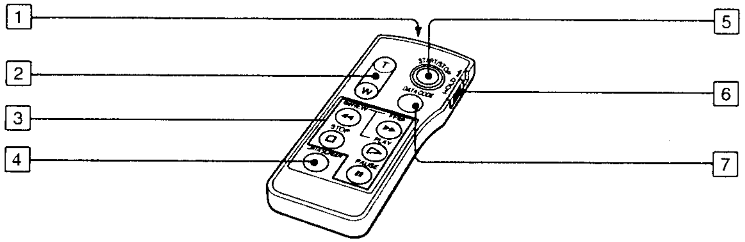
6
7
8
9
10
11
Hi8
DC
ZERO MEM
COUNTER
12:34:56
10
FOCUS MANUAL
HOLD
10000
EXPOSURE MANUAL
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
HOLD
ZOOM MIC
Hi8
LP
STBY
T CYAN
10000
FADER
T
W
-0:00:00
ZERO MEM
S
E
2
PARIS
12:00:00
12:00:00

- **1** Data code indicator (p.23)
- **2** Playing back or recording in Hi8 format
- **3** Steady Shot function indicator (p.17)
- **4** Manual focusing (p.27)
- **5** White balance mode (p.29)
- **6** Appears when ZERO MEM is pressed (p.39, 40)
- **7** Tape counter, time or date indicator
- **8** World clock indicators (p.37)
- **9** Warning indicators (p.58)
- **10** Manual exposure indicator (p.32)
- **11** Shutter speed (p.31)
- **12** Manual focusing (p.27)
- **13** Steady Shot function indicator (p.17)
- **14** Appears when the BUILT-IN MIC is set to ZOOM MIC. (p.16)
- **15** White balance mode (p.29)
- **16** Title display mode and colour (p.35)
- **17** Shutter speed (p.31)
- **18** Appears when FADER is pressed (p.33)
- **19** Power zoom indicator/Exposure indicator (p.16, 32)
- **20** Data code (p.23)
- **21** Warning indicators (p.58)
- **22** Appears while recording in Hi8 system
- **23** Indicates the recording mode when recording/playing back a tape
  When you play back a tape recorded in LP mode, the LP indicator appears in the viewfinder.
- **24** Tape transport mode
- **25** Tape counter
- **26** Appears when ZERO MEM is pressed (p.39, 40)
- **27** Tape remaining indicator
  S▬E → S▬E → S▮E → 5min → 1min → 0min
- **28** Battery remaining indicator (p.7)
  ▮ → ▮ → ▮ → ▯ → ▯
- **29** World clock indicators (p.37)
- **30** Date or Time

Wireless Remote Commander



1 **Transmitter**
Point toward the remote sensor to control the camcorder after turning the POWER switch on the camcorder.

2 **Power zoom button**

3 **Tape transport buttons (p.21, 22)**

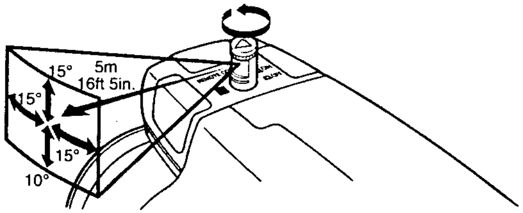
4 **DATA SCREEN button (p.22)**

5 **START/STOP button**

6 **HOLD switch**
Slide in the direction of the arrow to prevent the buttons from being accidentally pressed. **Before using this Remote Commander, slide in the direction opposite to the arrow.**

7 **DATA CODE button (p.23)**

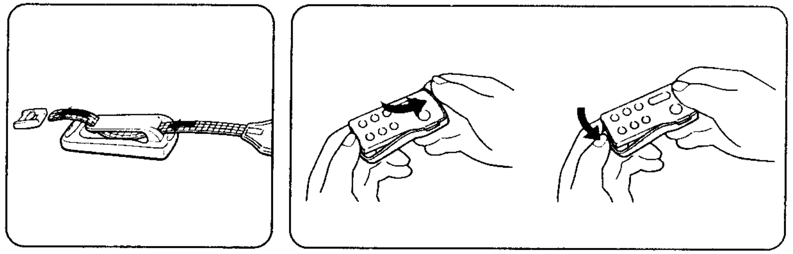
Remote Control Direction



Notes on the Remote Commander
- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor and the Remote Commander.
- This camcorder works at commander mode VTR 2. The commander modes (1, 2 and 3) are used to distinguish this camcorder from other Sony VTRs to avoid remote control misoperation. If you use another Sony VTR at commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VTR with black paper.

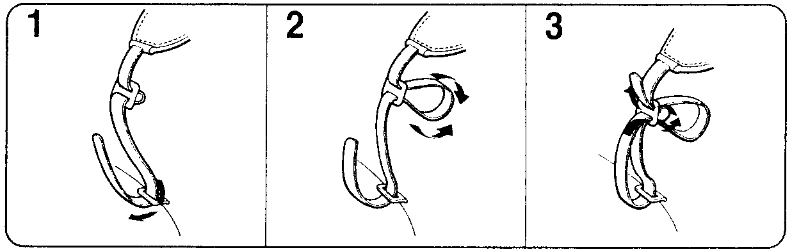
Using the Remote Commander Holder

You can slide the Remote Commander holder onto the shoulder strap.



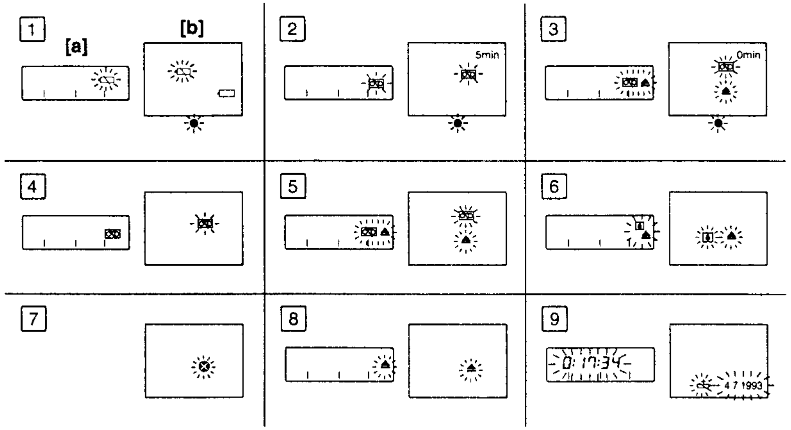
Attaching the Shoulder Strap

Attach the supplied shoulder strap to the hooks for the shoulder strap (p.50).



Warning Indicators

If indicators flash in the display window **[a]** or the viewfinder **[b]**, or a caution lamp on the camcorder flashes, check the following:



1 Battery remaining
Slow flashing: The battery is weak.
Fast flashing: The battery is dead.

2 The tape is near the end.

3 The tape has run out.

4 No tape has been inserted.

5 The tab on the tape is out (red) (p.42).

6 Moisture condensation has occurred (p.43).

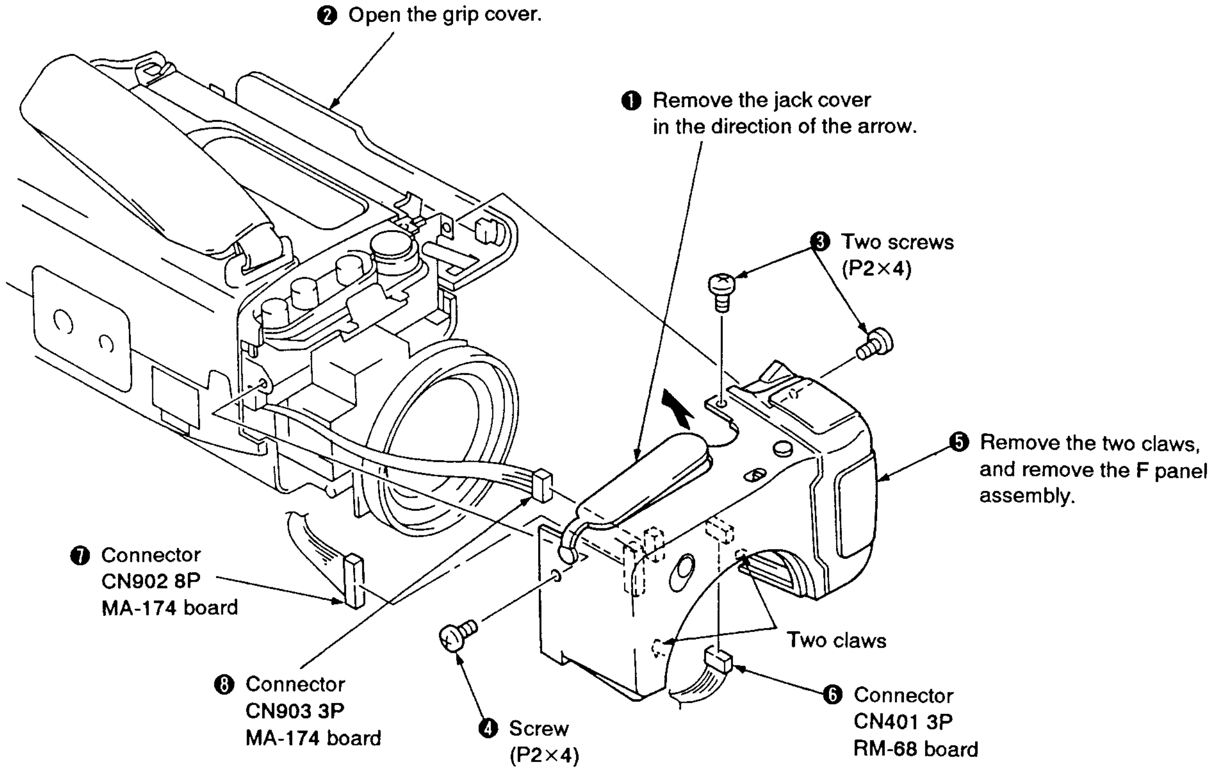
7 The video heads may be contaminated (p.44).

8 Some other trouble has occurred.
Disconnect the power source and contact your Sony dealer or local authorized facility.

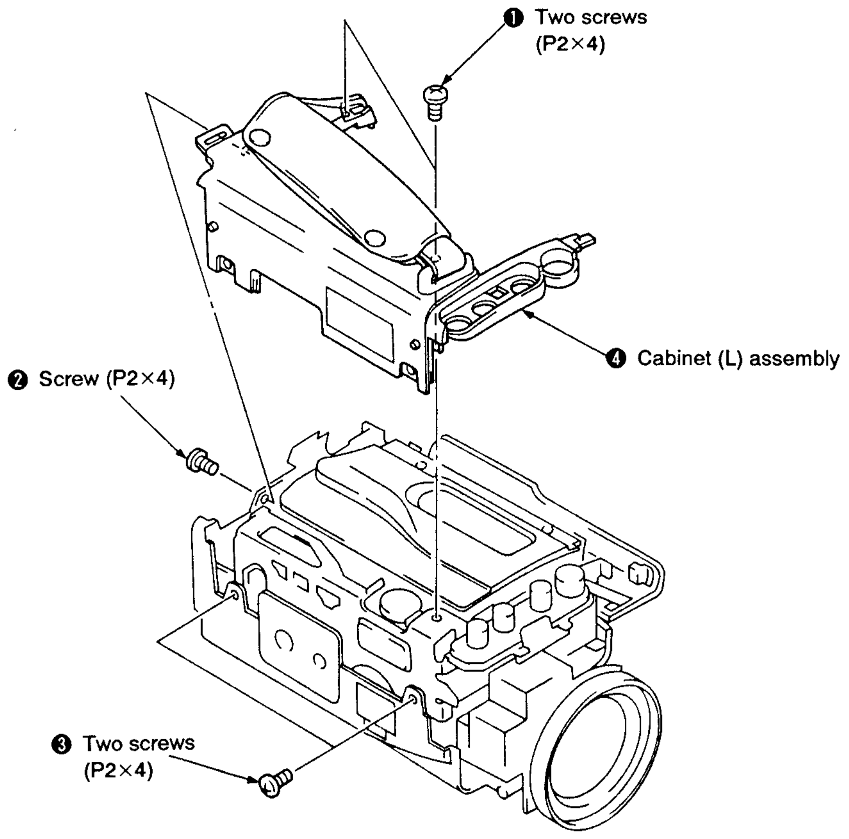
9 The lithium battery is weak or the lithium battery is not installed (p.9).

SECTION 2
DISASSEMBLY

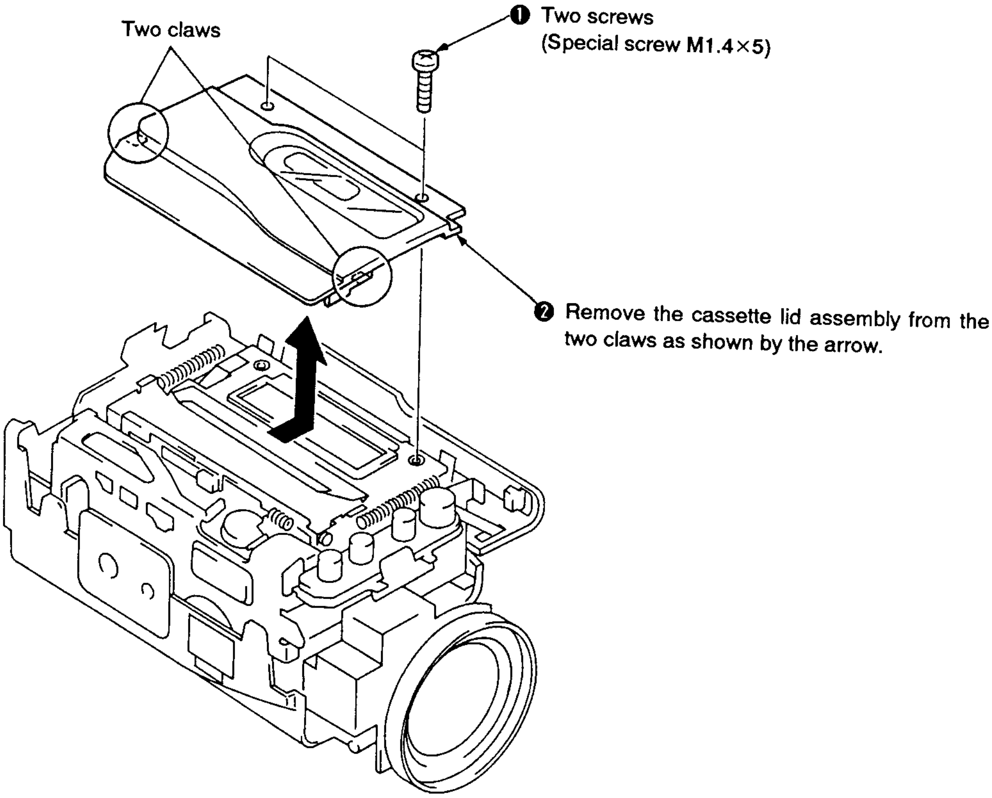
2-1. REMOVAL OF F PANEL ASSEMBLY


❷ Open the grip cover.
❶ Remove the jack cover in the direction of the arrow.
❸ Two screws (P2×4)
❺ Remove the two claws, and remove the F panel assembly.
❼ Connector CN902 8P MA-174 board
Two claws
❽ Connector CN903 3P MA-174 board
❹ Screw (P2×4)
❻ Connector CN401 3P RM-68 board

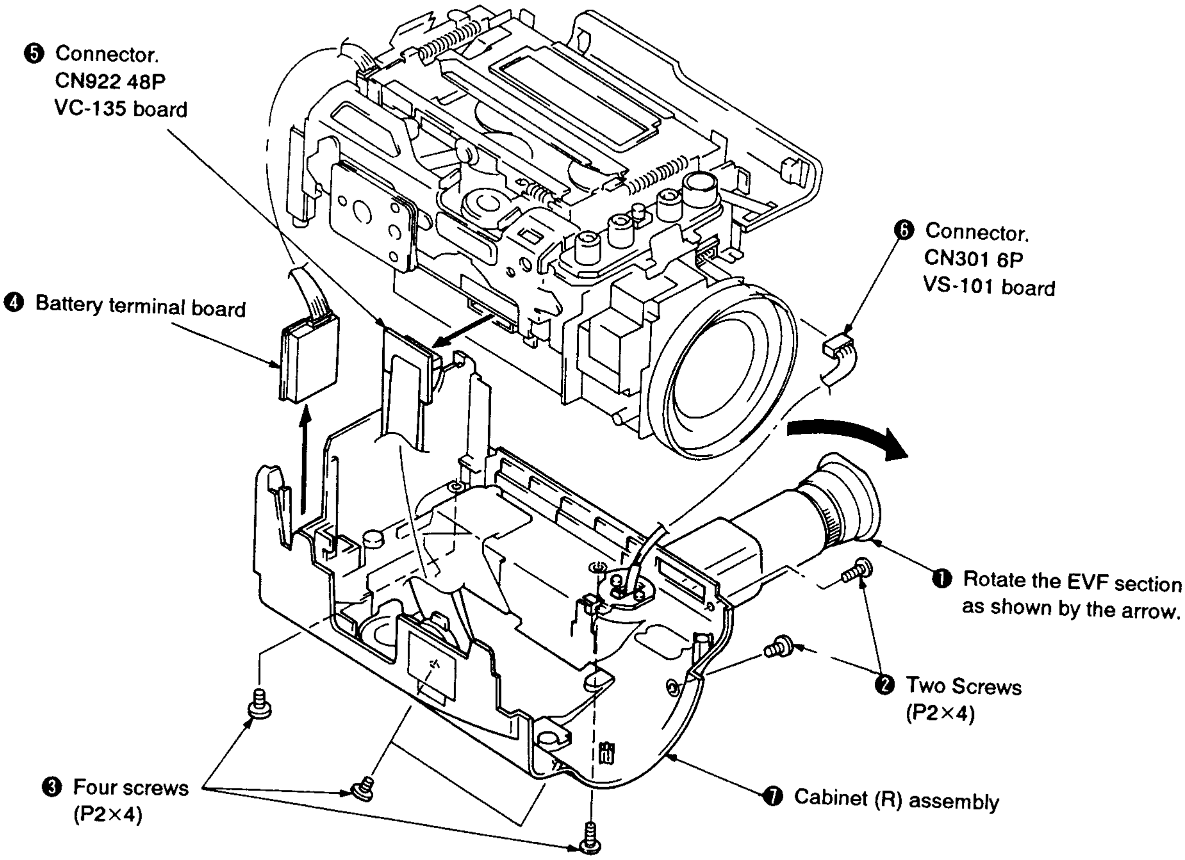
2-2. REMOVAL OF CABINET (L) ASSEMBLY


❶ Two screws (P2×4)
❹ Cabinet (L) assembly
❷ Screw (P2×4)
❸ Two screws (P2×4)

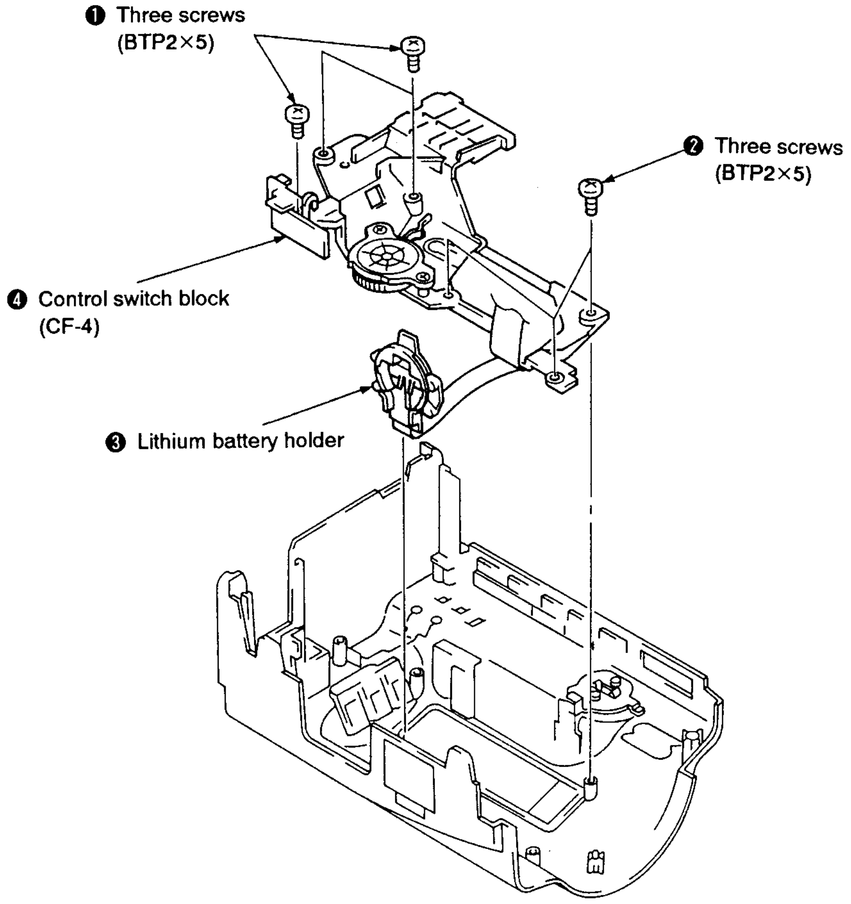
2-3. REMOVAL OF CASSETTE LID ASSEMBLY


Two claws
❶ Two screws
(Special screw M1.4×5)
❷ Remove the cassette lid assembly from the two claws as shown by the arrow.

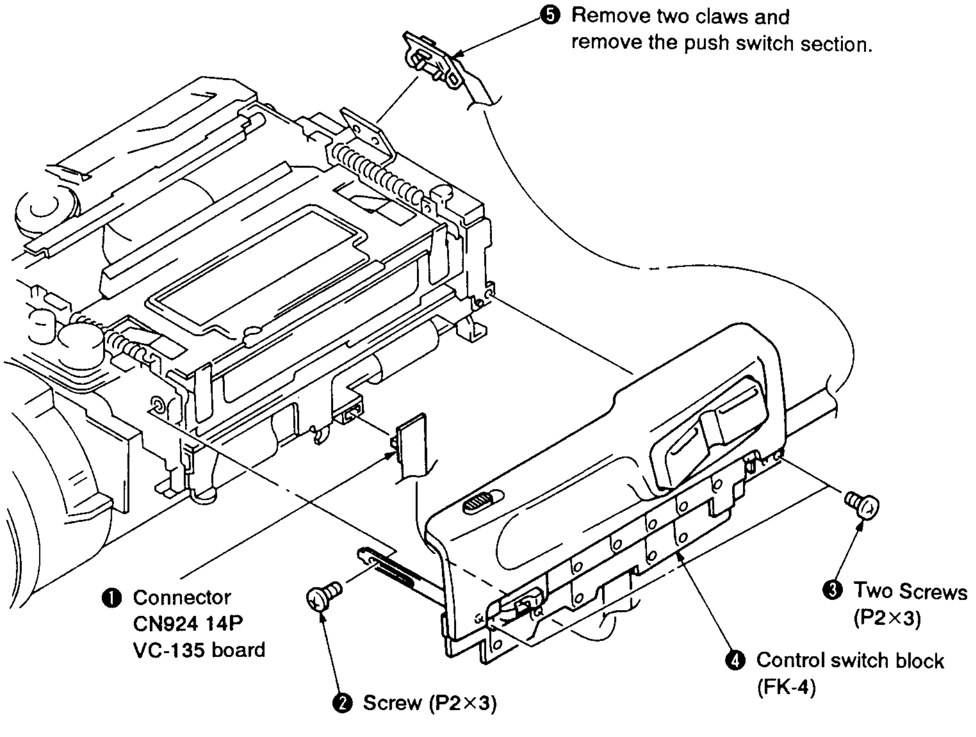
2-4. REMOVAL OF CABINET (R) ASSEMBLY


❺ Connector.
CN922 48P
VC-135 board
❹ Battery terminal board
❻ Connector.
CN301 6P
VS-101 board
❶ Rotate the EVF section as shown by the arrow.
❷ Two Screws
(P2×4)
❸ Four screws
(P2×4)
❼ Cabinet (R) assembly

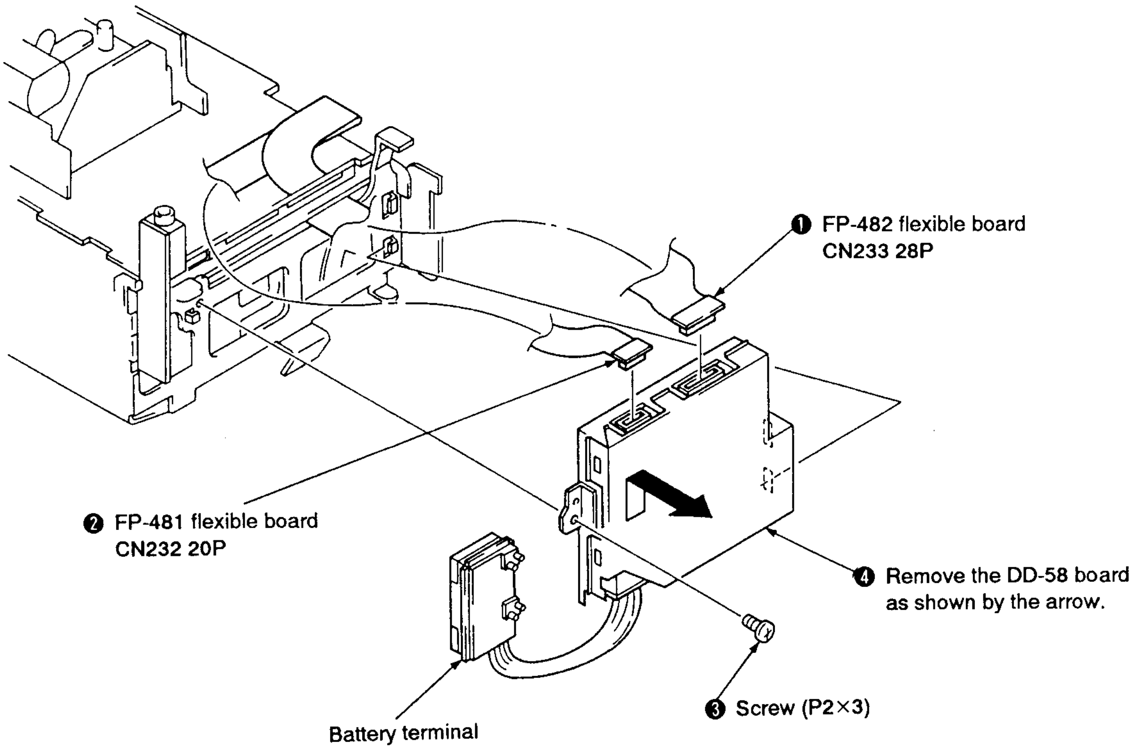
2-5. REMOVAL OF CONTROL SWITCH BLOCK (CF-4)


❶ Three screws
(BTP2×5)
❷ Three screws
(BTP2×5)
❹ Control switch block
(CF-4)
❸ Lithium battery holder

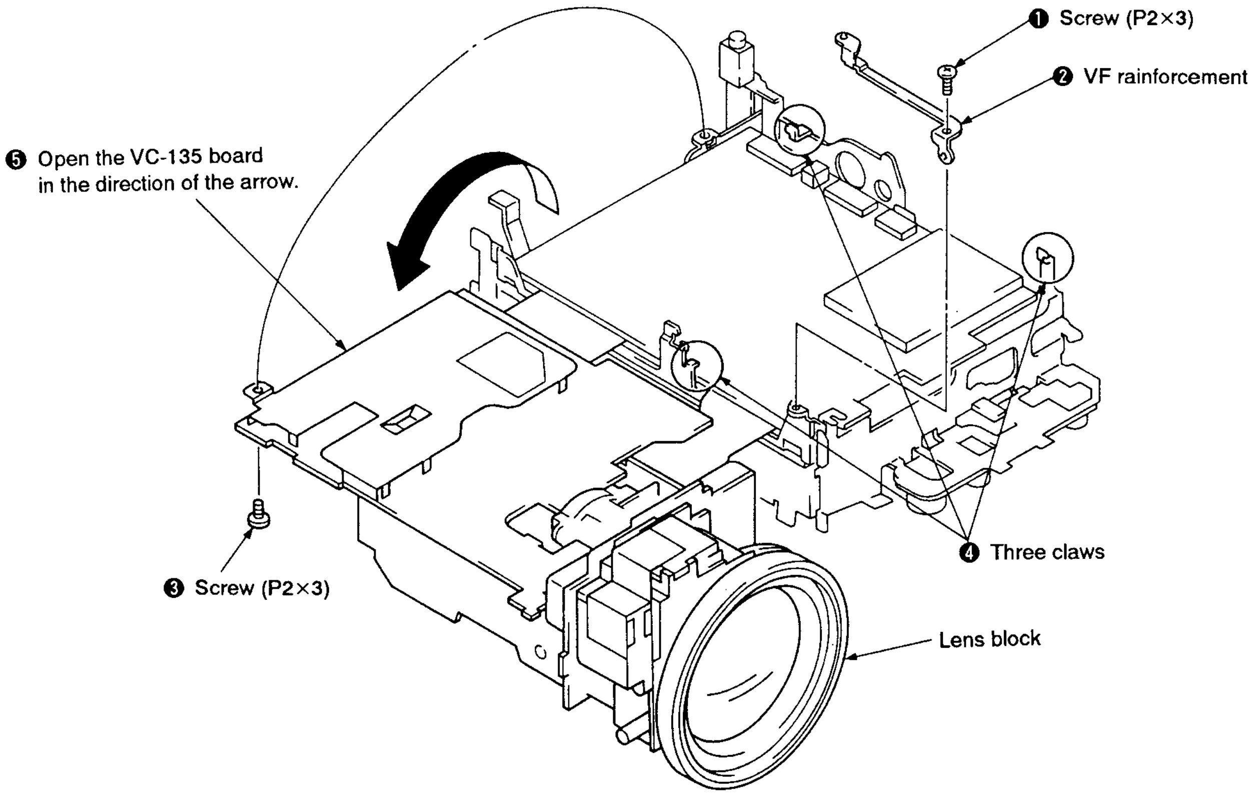
2-6. REMOVAL OF CONTROL SWITCH BLOCK (FK-4)


❺ Remove two claws and
remove the push switch section.
❶ Connector
CN924 14P
VC-135 board
❷ Screw (P2×3)
❸ Two Screws
(P2×3)
❹ Control switch block
(FK-4)

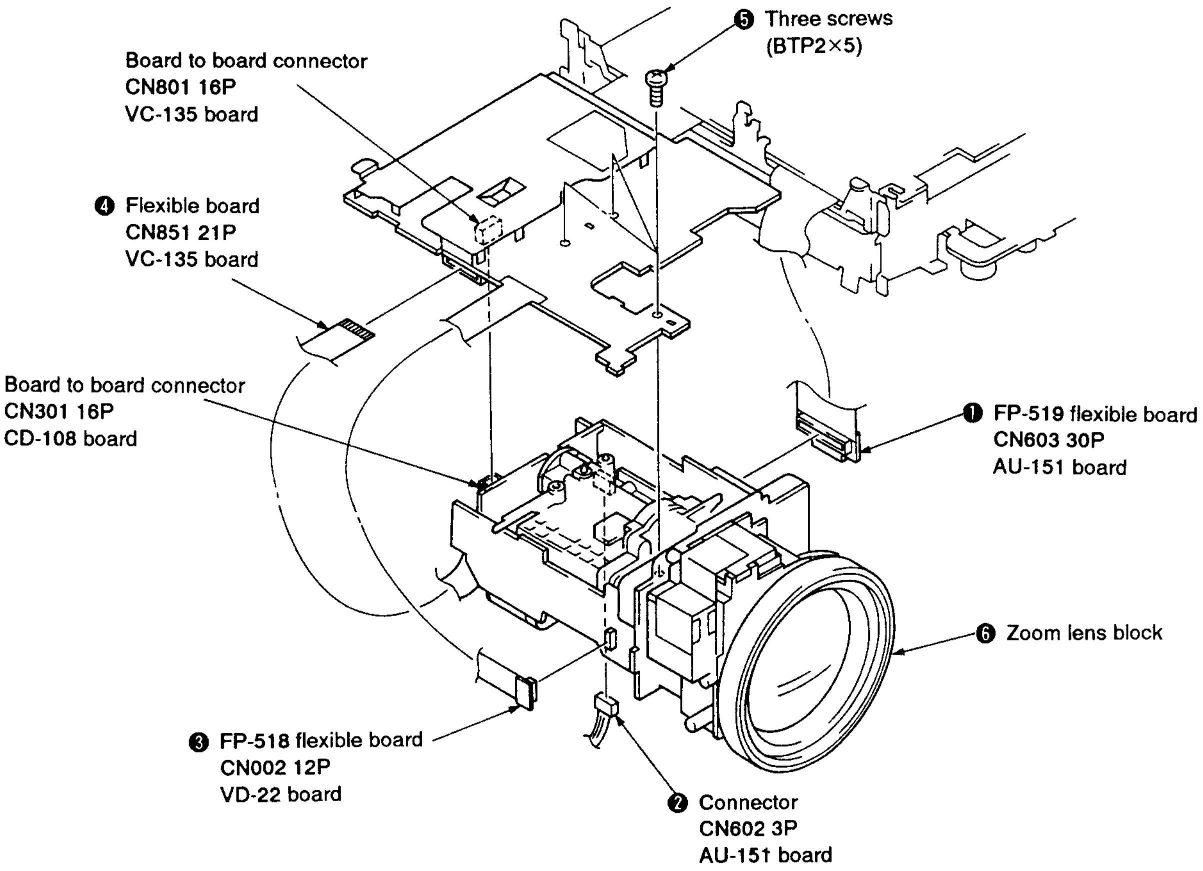
2-7. REMOVAL OF DD-58 BOARD (DC-DC CONVERTER UNIT)


❶ FP-482 flexible board
CN233 28P
❷ FP-481 flexible board
CN232 20P
❹ Remove the DD-58 board
as shown by the arrow.
❸ Screw (P2×3)
Battery terminal

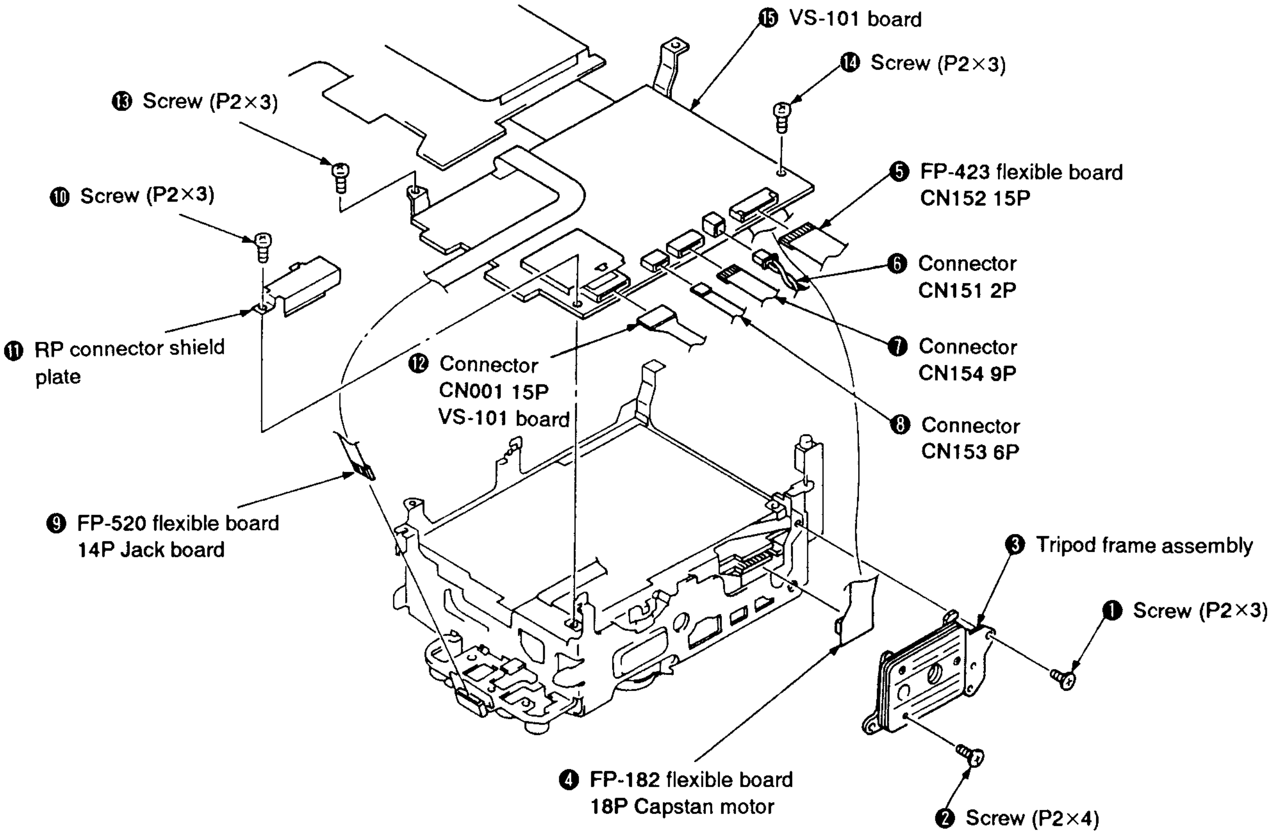
2-8. OPENING OF VC-135 BOARD


❶ Screw (P2×3)
❷ VF rainforcement
❺ Open the VC-135 board
in the direction of the arrow.
❹ Three claws
❸ Screw (P2×3)
Lens block

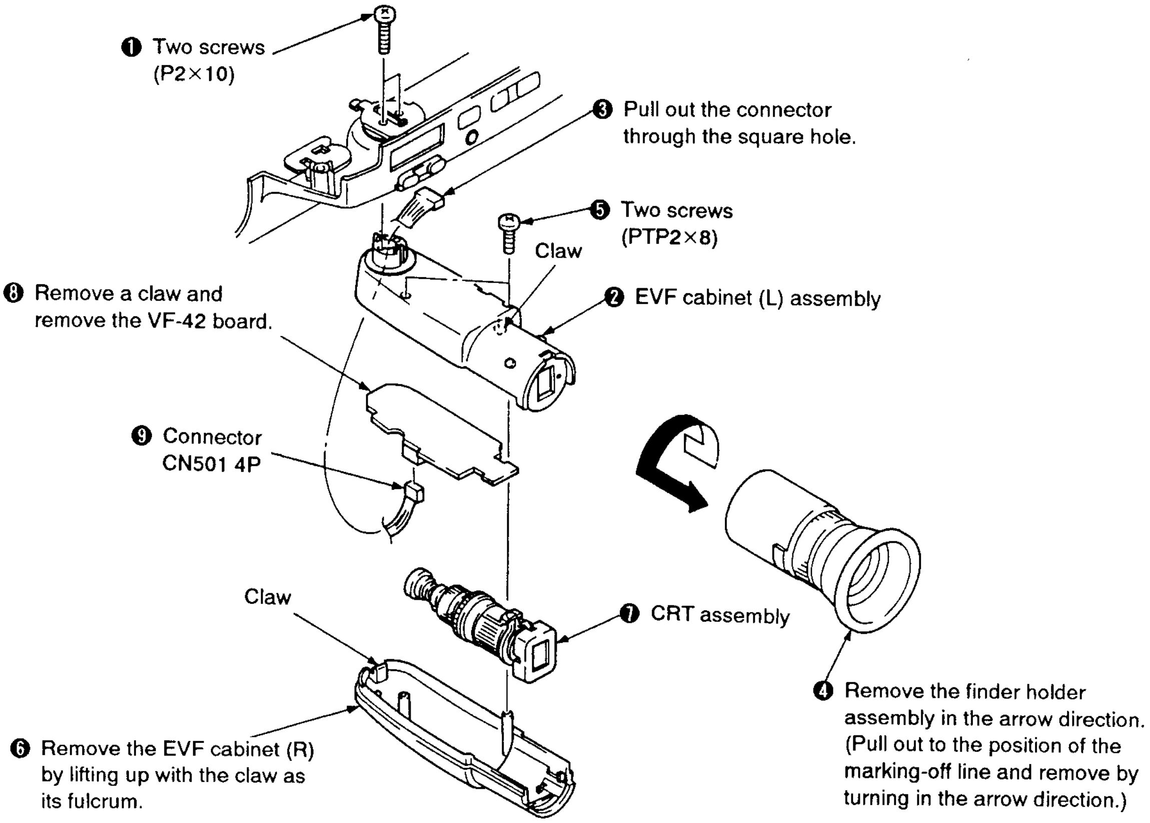
2-9. REMOVAL OF ZOOM LENS ASSEMBLY


❺ Three screws
(BTP2×5)
Board to board connector
CN801 16P
VC-135 board
❹ Flexible board
CN851 21P
VC-135 board
Board to board connector
CN301 16P
CD-108 board
❶ FP-519 flexible board
CN603 30P
AU-151 board
❻ Zoom lens block
❸ FP-518 flexible board
CN002 12P
VD-22 board
❷ Connector
CN602 3P
AU-151 board

2-10. REMOVAL OF VS-101 BOARD


⓯ VS-101 board
⓮ Screw (P2×3)
⓭ Screw (P2×3)
❺ FP-423 flexible board
CN152 15P
❿ Screw (P2×3)
❻ Connector
CN151 2P
⓫ RP connector shield
plate
❼ Connector
CN154 9P
⓬ Connector
CN001 15P
VS-101 board
❽ Connector
CN153 6P
❾ FP-520 flexible board
14P Jack board
❸ Tripod frame assembly
❶ Screw (P2×3)
❹ FP-182 flexible board
18P Capstan motor
❷ Screw (P2×4)

2-11. REMOVAL OF EVF ASSEMBLY (VF-42 BOARD)



❶ Two screws (P2×10)

❸ Pull out the connector through the square hole.

❺ Two screws (PTP2×8)

❽ Remove a claw and remove the VF-42 board.

❷ EVF cabinet (L) assembly

❾ Connector CN501 4P

❼ CRT assembly

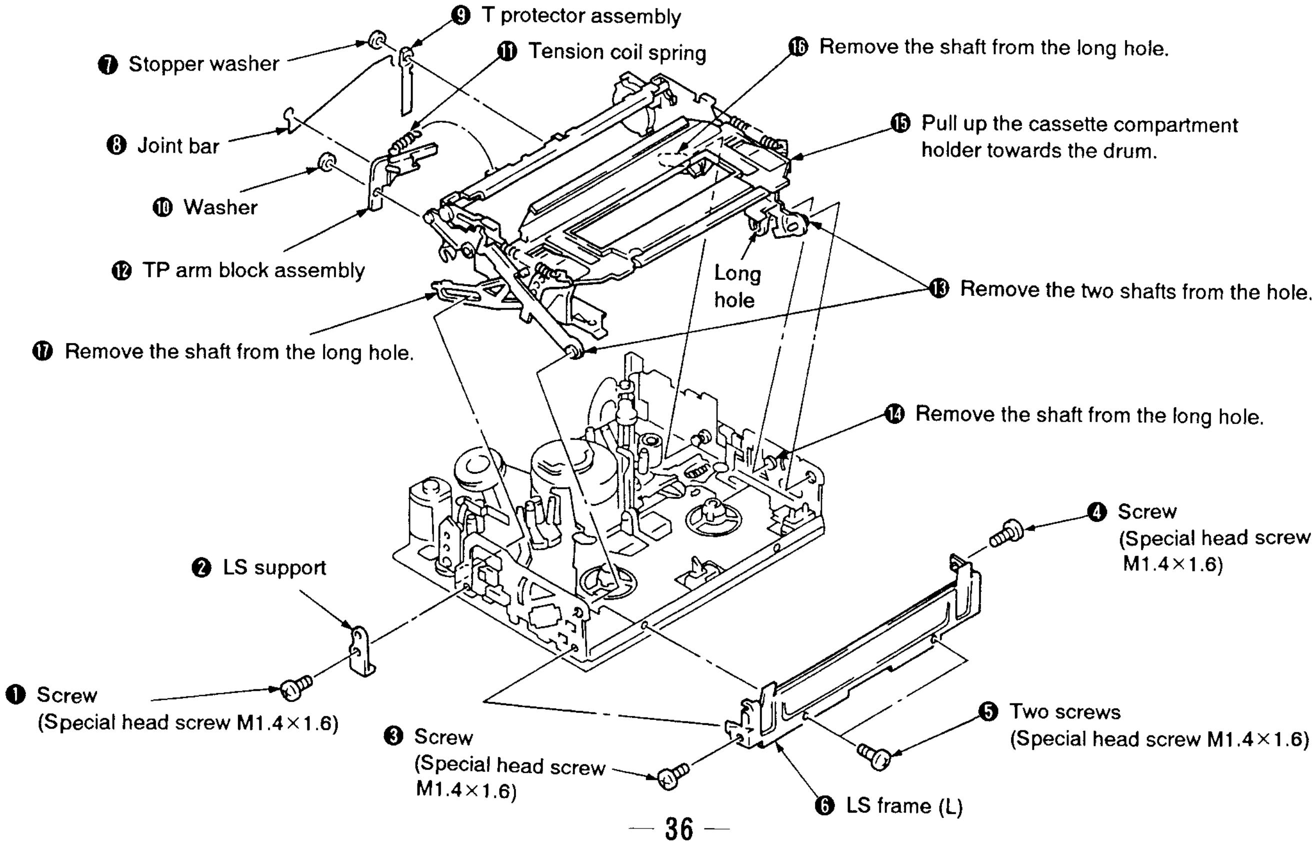
❻ Remove the EVF cabinet (R) by lifting up with the claw as its fulcrum.

❹ Remove the finder holder assembly in the arrow direction. (Pull out to the position of the marking-off line and remove by turning in the arrow direction.)

2-12. REMOVAL OF CASSETTE COMPARTMENT HOLDER ASSEMBLY

In the beginning, set to USE mode.

(When setting to USE mode, see "2-4. Handling of Mode Selector" in "8 mm video mechanical adjustment manual II FL Mechanism (Q mechanism)".)



❾ T protector assembly

❼ Stopper washer

⓫ Tension coil spring

⓰ Remove the shaft from the long hole.

❽ Joint bar

⓯ Pull up the cassette compartment holder towards the drum.

❿ Washer

⓬ TP arm block assembly

⓭ Remove the two shafts from the hole.

⓱ Remove the shaft from the long hole.

⓮ Remove the shaft from the long hole.

❹ Screw (Special head screw M1.4×1.6)

❷ LS support

❶ Screw (Special head screw M1.4×1.6)

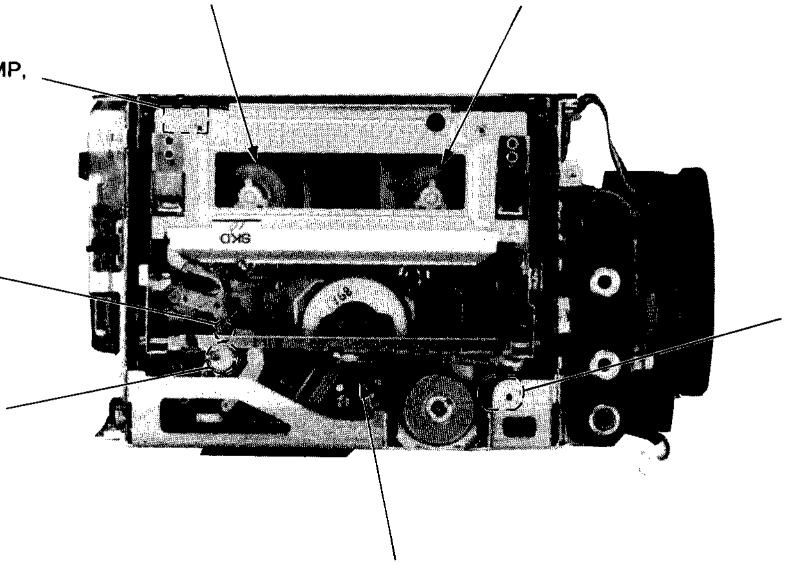
❸ Screw (Special head screw M1.4×1.6)

❺ Two screws (Special head screw M1.4×1.6)

❻ LS frame (L)

2-13. INTERNAL VIEWS

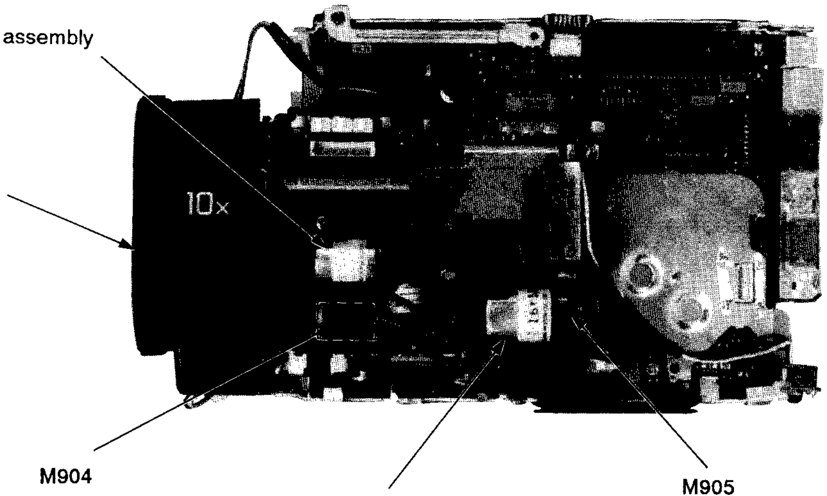
— Left Side —


T reel table assembly
X-3727-951-2
S reel table assembly
X-3727-952-1
S992
REC PROOF, ME/MP,
Hi8 MP push switch
1-572-802-12
Pinch roller
M903
Loading motor
(LA12G-344VA)
1-541-607-21
M902
Capstan motor
(U-21A)
8-835-329-12

M901

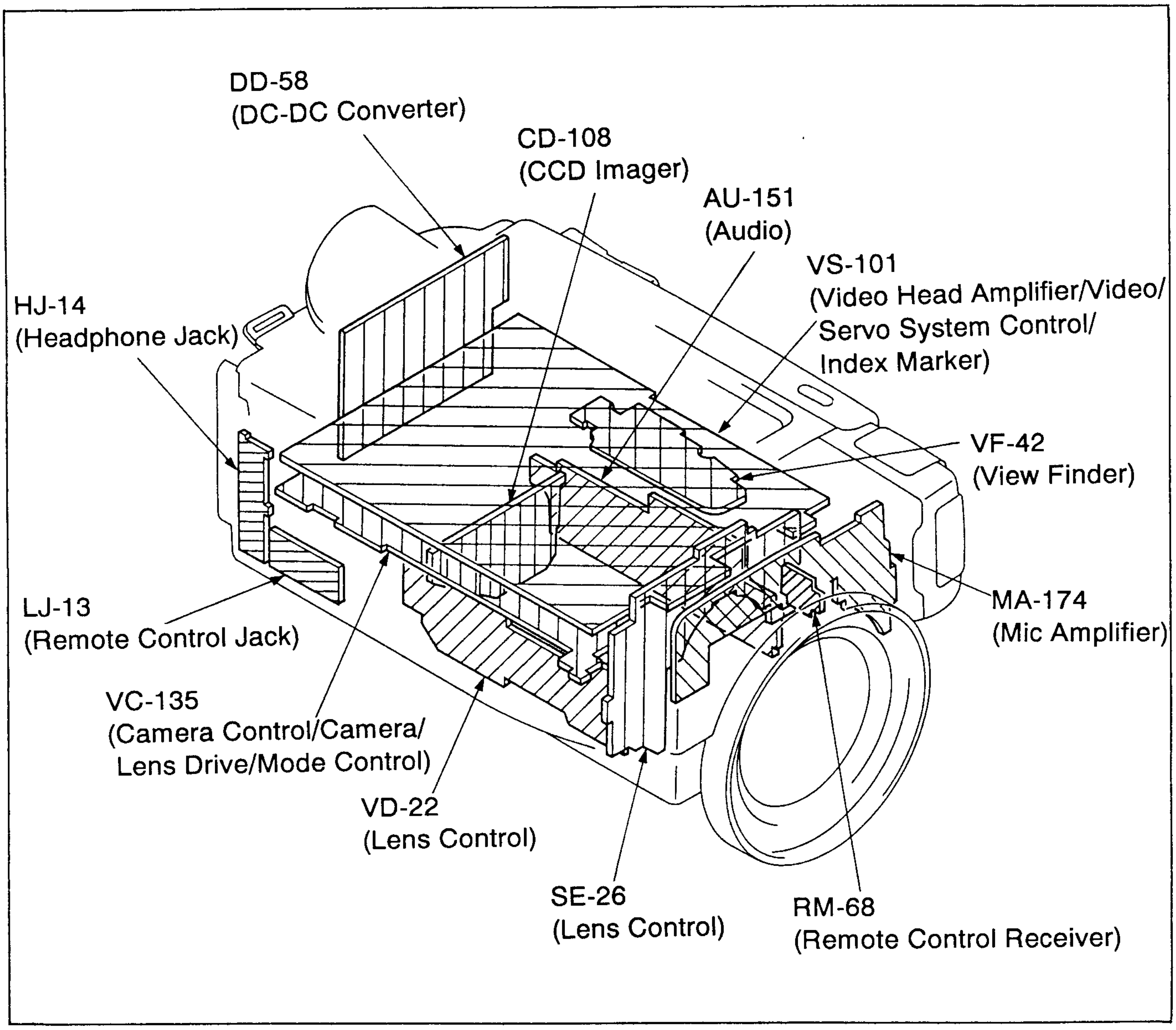
Drum Assembly	A-7048-653-A (DGH-80D-R)
Upper Rotary Drum Assembly	A-7049-461-A (DGR-80-R-(1)) (Color mark:Green, Green/Red, Black, Black/Red)
	A-7049-464-A (DGR-80-R-(2)) (Color mark:Red, Red/Red, Blue, Blue/Red)

— Right Side —

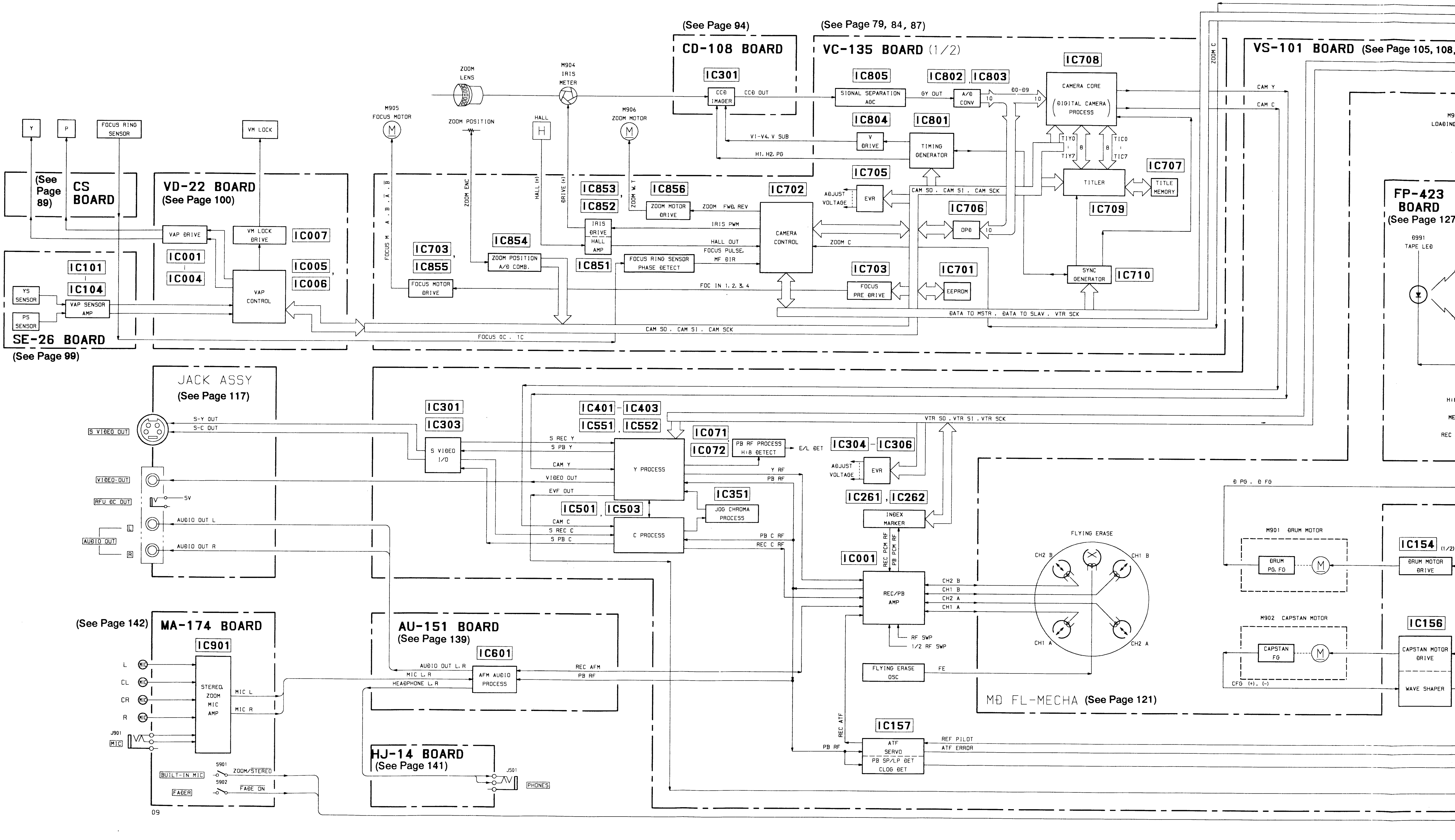

Initialize motor assembly
3-708-444-01
Zoom lens
(VCL-6210WB)
10×
M904
IG meter (Iris)
3-708-445-01
M906
PZ motor assembly (Zoom)
3-708-442-01
M905
Stepping motor assembly (Focus)
3-708-443-01

SECTION 3
DIAGRAMS

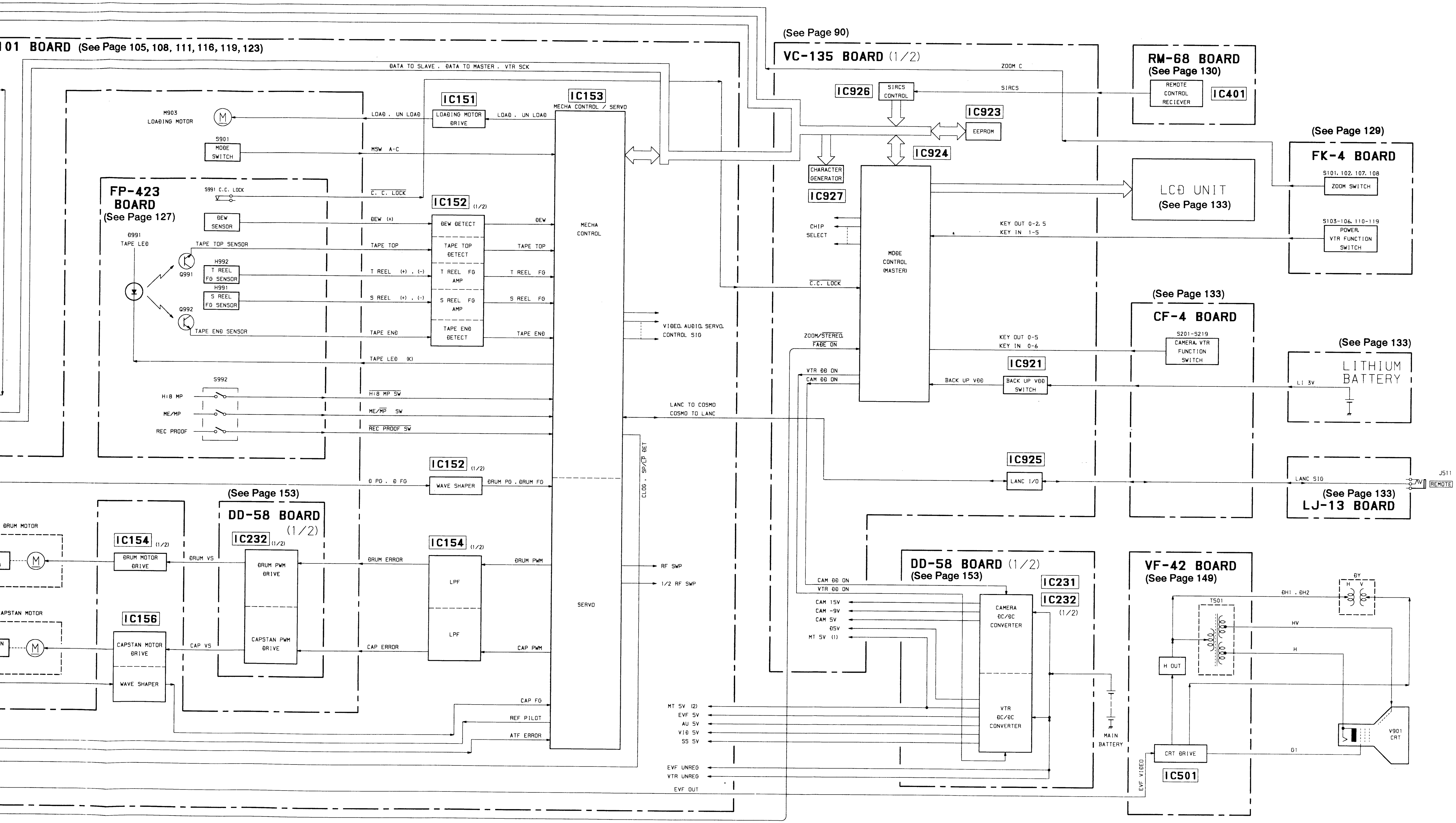
3-1. CIRCUIT BOARDS LOCATION


DD-58
(DC-DC Converter)
CD-108
(CCD Imager)
AU-151
(Audio)
VS-101
(Video Head Amplifier/Video/
Servo System Control/
Index Marker)
HJ-14
(Headphone Jack)
VF-42
(View Finder)
MA-174
(Mic Amplifier)
LJ-13
(Remote Control Jack)
VC-135
(Camera Control/Camera/
Lens Drive/Mode Control)
VD-22
(Lens Control)
SE-26
(Lens Control)
RM-68
(Remote Control Receiver)

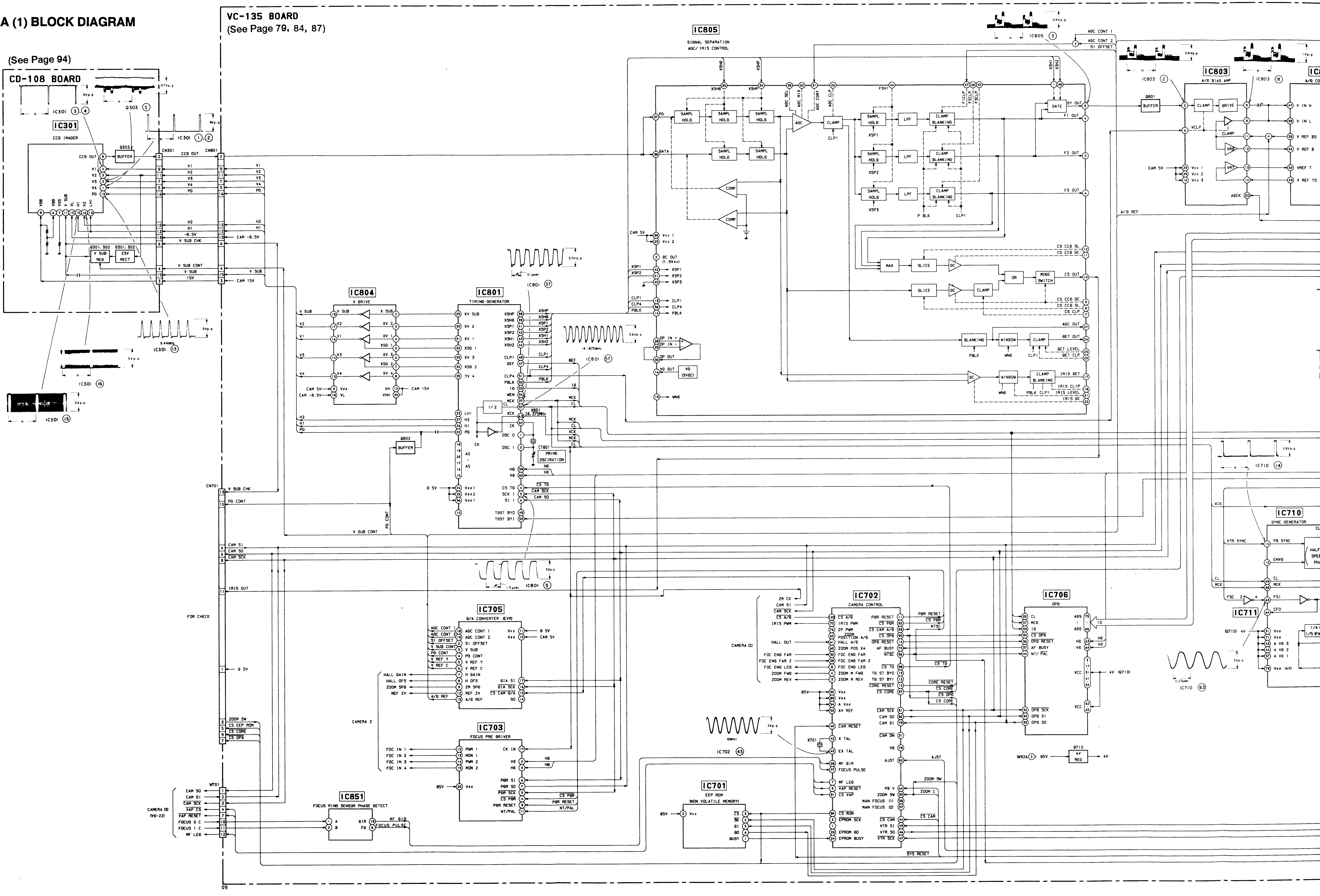
3-2. OVERALL BLOCK DIAGRAM

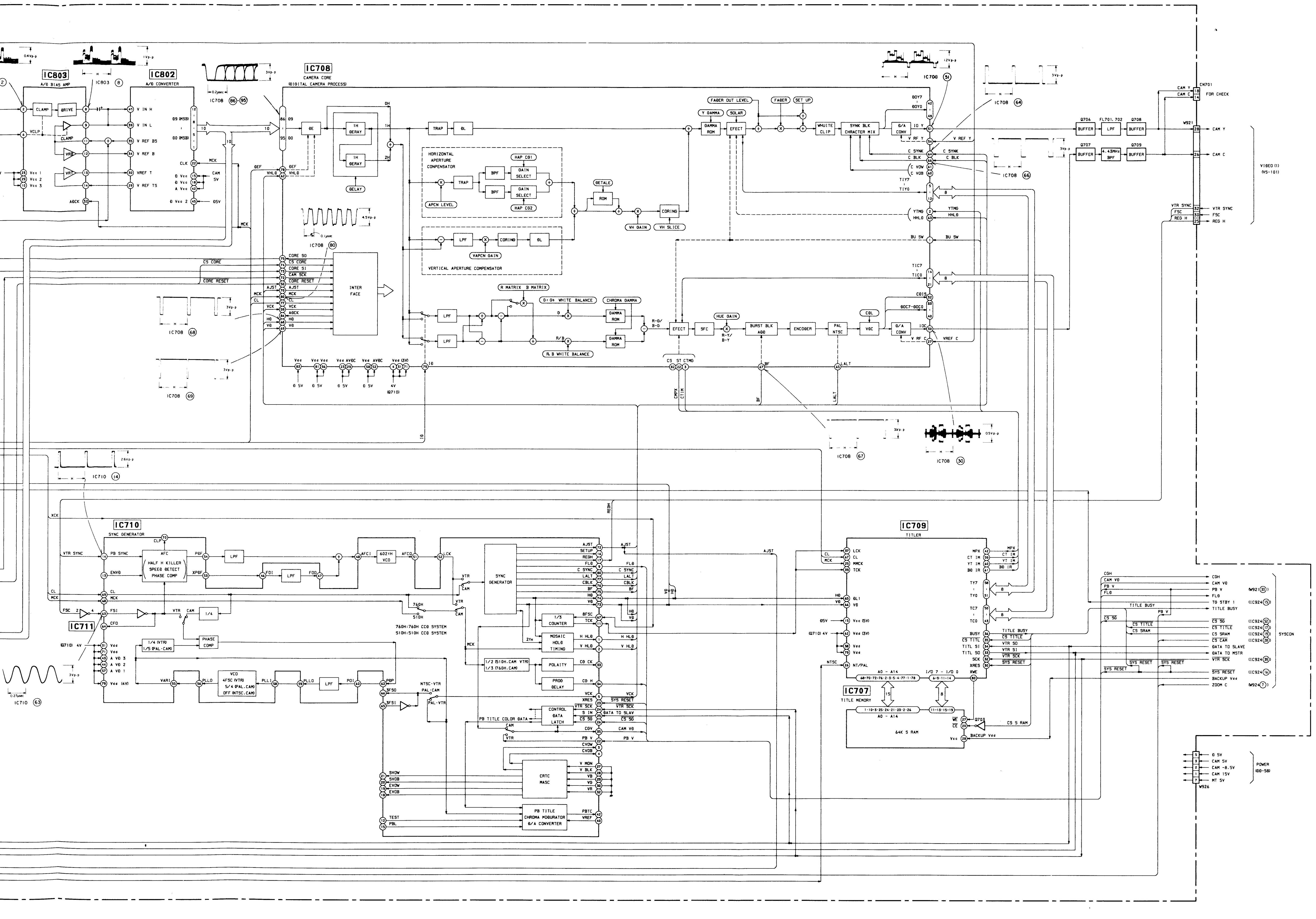


(See Page 94)
CD-108 BOARD
IC301
CCD IMAGER
CCD OUT
(See Page 79, 84, 87)
VC-135 BOARD (1/2)
IC805
SIGNAL SEPARATION AGC
IC802
IC803
A/D CONV
GY OUT
D0-D9
10
IC708
CAMERA CORE
(DIGITAL CAMERA PROCESS)
IC804
V DRIVE
IC801
TIMING GENERATOR
V1-V4, V SUB
H1, H2, PG
TIY0
TIY7
TIC0
TIC7
8
IC705
EVR
ADJUST VOLTAGE
IC707
TITLER
TITLE MEMORY
IC709
CAM SO, CAM SI, CAM SCK
IC706
DPD
IC702
CAMERA CONTROL
ZOOM C
IC703
FOCUS PRE DRIVE
IC701
EEPROM
IC710
SYNC GENERATOR
DATA TO MSTR, DATA TO SLAV, VTR SCK
VS-101 BOARD (See Page 105, 108,
CAM Y
CAM C
ZOOM C
FP-423
BOARD
(See Page 127
D991
TAPE LED
LOADING
ZOOM LENS
M904 IRIS METER
M905 FOCUS MOTOR
ZOOM POSITION
HALL
H
M906 ZOOM MOTOR
M
Y
P
FOCUS RING SENSOR
VM LOCK
(See Page 89)
CS BOARD
VD-22 BOARD
(See Page 100)
VAP DRIVE
VM LOCK DRIVE
IC007
IC001
IC004
IC005
IC006
VAP CONTROL
SE-26 BOARD
(See Page 99)
IC101
IC104
YS SENSOR
PS SENSOR
VAP SENSOR AMP
FOCUS M A, B, Ā, B̄
ZOOM ENC
HALL (+)
DRIVE (+)
ZOOM W, T
IC853
IC852
IC856
ZOOM MOTOR DRIVE
ZOOM FWD, REV
IRIS DRIVE
IRIS PWM
HALL AMP
HALL OUT
IC854
ZOOM POSITION A/D COMB.
IC703
IC855
FOCUS MOTOR DRIVE
IC851
FOCUS RING SENSOR PHASE DETECT
FOCUS PULSE, MF DIR
FOC IN 1, 2, 3, 4
CAM SO, CAM SI, CAM SCK
FOCUS DC, 1C
JACK ASSY
(See Page 117)
S VIDEO OUT
S-Y OUT
S-C OUT
VIDEO OUT
RFU DC OUT
5V
AUDIO OUT
L
R
AUDIO OUT L
AUDIO OUT R
IC301
IC303
S VIDEO I/O
IC401
IC403
IC551
IC552
S REC Y
S PB Y
CAM Y
VIDEO OUT
EVF OUT
Y PROCESS
IC071
IC072
PB RF PROCESS H/B DETECT
E/L DET
Y RF
PB RF
VTR SO, VTR SI, VTR SCK
IC304
IC306
ADJUST VOLTAGE
EVR
IC351
JOG CHROMA PROCESS
IC501
IC503
CAM C
S REC C
S PB C
C PROCESS
PB C RF
REC C RF
IC261
IC262
INDEX MARKER
REC PCM RF
PB PCM RF
IC001
REC/PB AMP
CH2 B
CH1 B
CH2 A
CH1 A
RF SWP
1/2 RF SWP
FLYING ERASE
FLYING ERASE OSC
FE
CH2 B
CH1 B
CH1 A
CH2 A
MD FL-MECHA (See Page 121)
D PG, D FG
M901 DRUM MOTOR
DRUM PG, FG
M
IC154 (1/2)
DRUM MOTOR DRIVE
M902 CAPSTAN MOTOR
CAPSTAN FG
CFG (+), (-)
IC156
CAPSTAN MOTOR DRIVE
WAVE SHAPER
REC ATF
PB RF
IC157
ATF SERVO
PB SP/LP DET
CLOG DET
REF PILOT
ATF ERROR
(See Page 142)
MA-174 BOARD
IC901
L
CL
CR
R
MIC
STEREO ZOOM MIC AMP
MIC L
MIC R
J901
BUILT-IN MIC
S901
ZOOM/STEREO
S902
FADER
FADE ON
AU-151 BOARD
(See Page 139)
IC601
AFM AUDIO PROCESS
AUDIO OUT L, R
MIC L, R
HEADPHONE L, R
REC AFM
PB RF
HJ-14 BOARD
(See Page 141)
J501
PHONES

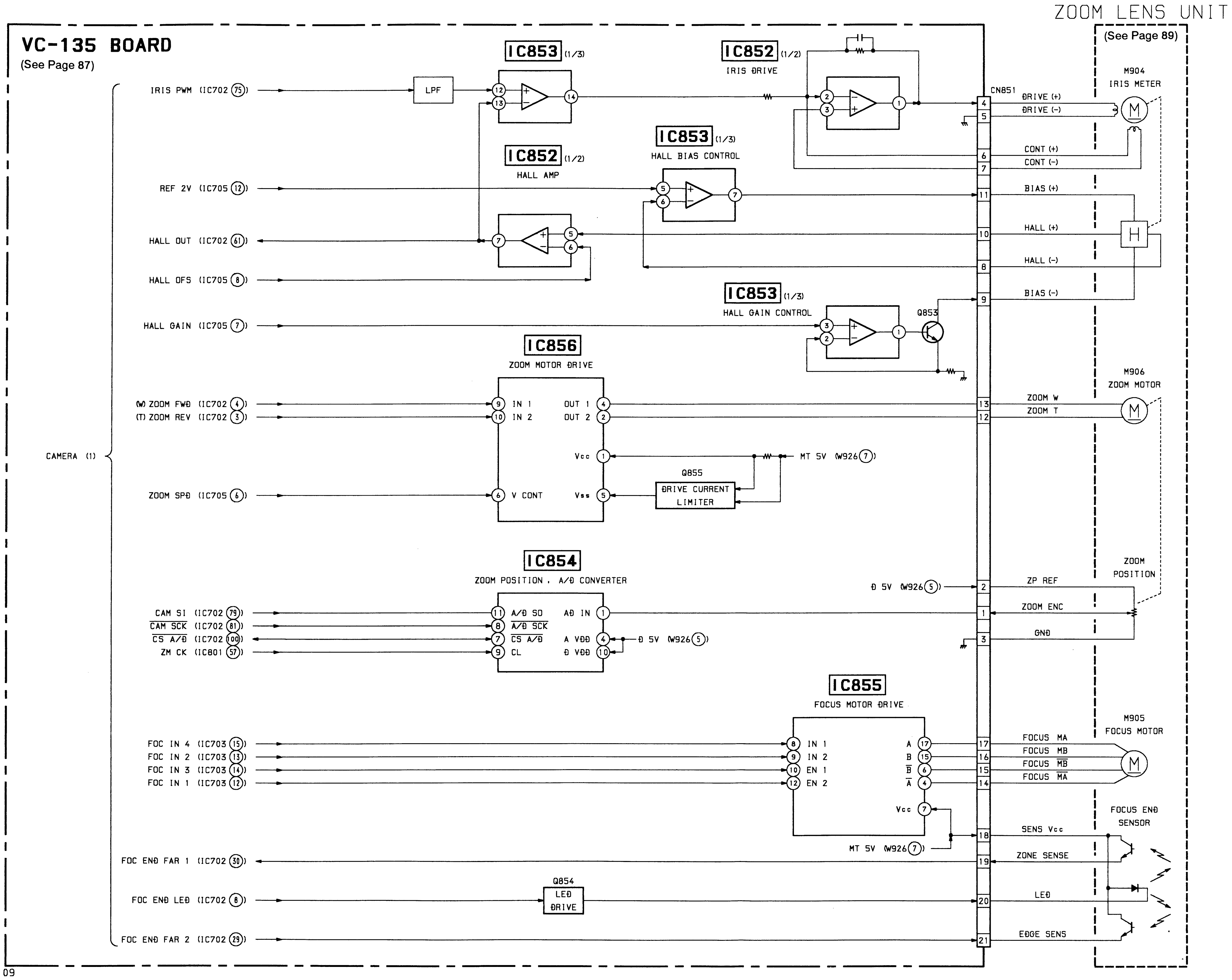

101 BOARD (See Page 105, 108, 111, 116, 119, 123)
DATA TO SLAVE, DATA TO MASTER, VTR SCK
IC151
LOADING MOTOR DRIVE
IC153
MECHA CONTROL / SERVO
M903 LOADING MOTOR
LOAD, UN LOAD
S901 MODE SWITCH
MSW A-C
C. C. LOCK
FP-423 BOARD
(See Page 127)
S991 C.C. LOCK
DEW SENSOR
D991 TAPE LED
TAPE TOP SENSOR
Q991
H992 T REEL FG SENSOR
H991 S REEL FG SENSOR
Q992
TAPE END SENSOR
IC152 (1/2)
DEW DETECT
DEW (+)
DEW
TAPE TOP
TAPE TOP DETECT
T REEL (+), (-)
T REEL FG AMP
T REEL FG
S REEL (+), (-)
S REEL FG AMP
S REEL FG
TAPE END
TAPE END DETECT
MECHA CONTROL
TAPE LED (K)
S992
Hi8 MP
ME/MP
REC PROOF
Hi8 MP SW
ME/MP SW
REC PROOF SW
VIDEO, AUDIO, SERVO, CONTROL SIG
LANC TO COSMO
COSMO TO LANC
CLOG, SP/LP DET
IC152 (1/2)
D PG, D FG
WAVE SHAPER
DRUM PG, DRUM FG
(See Page 153)
DD-58 BOARD (1/2)
IC232 (1/2)
DRUM MOTOR
IC154 (1/2)
DRUM MOTOR DRIVE
DRUM VS
DRUM PWM DRIVE
DRUM ERROR
IC154 (1/2)
LPF
DRUM PWM
RF SWP
1/2 RF SWP
SERVO
CAPSTAN MOTOR
IC156
CAPSTAN MOTOR DRIVE
CAP VS
CAPSTAN PWM DRIVE
CAP ERROR
LPF
CAP PWM
WAVE SHAPER
CAP FG
REF PILOT
ATF ERROR
MT 5V (2)
EVF 5V
AU 5V
VID 5V
SS 5V
EVF UNREG
VTR UNREG
EVF OUT
(See Page 90)
VC-135 BOARD (1/2)
ZOOM C
IC926
SIRCS CONTROL
SIRCS
IC923
EEPROM
IC924
CHARACTER GENERATOR
IC927
CHIP SELECT
MODE CONTROL (MASTER)
C.C. LOCK
ZOOM/STEREO
FADE ON
VTR DD ON
CAM DD ON
KEY OUT 0-2, 5
KEY IN 1-5
KEY OUT 0-5
KEY IN 0-6
IC921
BACK UP VDD
BACK UP VDD SWITCH
IC925
LANC I/O
RM-68 BOARD
(See Page 130)
REMOTE CONTROL RECIEVER
IC401
LCD UNIT
(See Page 133)
(See Page 129)
FK-4 BOARD
S101, 102, 107, 108
ZOOM SWITCH
S103-106, 110-119
POWER, VTR FUNCTION SWITCH
(See Page 133)
CF-4 BOARD
S201-S219
CAMERA, VTR FUNCTION SWITCH
(See Page 133)
LITHIUM BATTERY
LI 3V
LANC SIG
J511
REMOTE
(See Page 133)
LJ-13 BOARD
DD-58 BOARD (1/2)
(See Page 153)
IC231
IC232 (1/2)
CAM DD ON
VTR DD ON
CAM 15V
CAM -9V
CAM 5V
D5V
MT 5V (1)
CAMERA DC/DC CONVERTER
VTR DC/DC CONVERTER
MAIN BATTERY
VF-42 BOARD
(See Page 149)
DY
H V
DH1, DH2
T501
HV
H
H OUT
V901 CRT
G1
CRT DRIVE
IC501
EVF VIDEO

3-3. CAMERA (1) BLOCK DIAGRAM


(See Page 94)
CD-108 BOARD
IC301
CCD IMAGER
Q303
BUFFER
Q301, 302
V SUB REG
23V RECT
VC-135 BOARD
(See Page 79, 84, 87)
IC805
SIGNAL SEPARATION
AGC/IRIS CONTROL
SAMPL HOLD
AGC
CLAMP
LPF
CLAMP BLANKING
GATE
COMP
MAX
SLICE
OR
MODE SWITCH
BLANKING
WINDOW
IC803
A/D BIAS AMP
Q801
BUFFER
IC804
V DRIVE
IC801
TIMING GENERATOR
X801
28.375MHz
CT801
PRIME OSCIRATION
Q802
BUFFER
IC705
D/A CONVERTER (EVR)
IC703
FOCUS PRE DRIVER
IC851
FOCUS RING SENSOR PHASE DETECT
IC701
EEP ROM
(NON VOLATILE MEMORY)
IC702
CAMERA CONTROL
X701
IC706
OPG
Q710
4V REG
IC710
SYNC GENERATOR
IC711
CN301
CN801
CN701
W701
FOR CHECK
CAMERA (2)
CAMERA 2
CAMERA (3)
(VD-22)

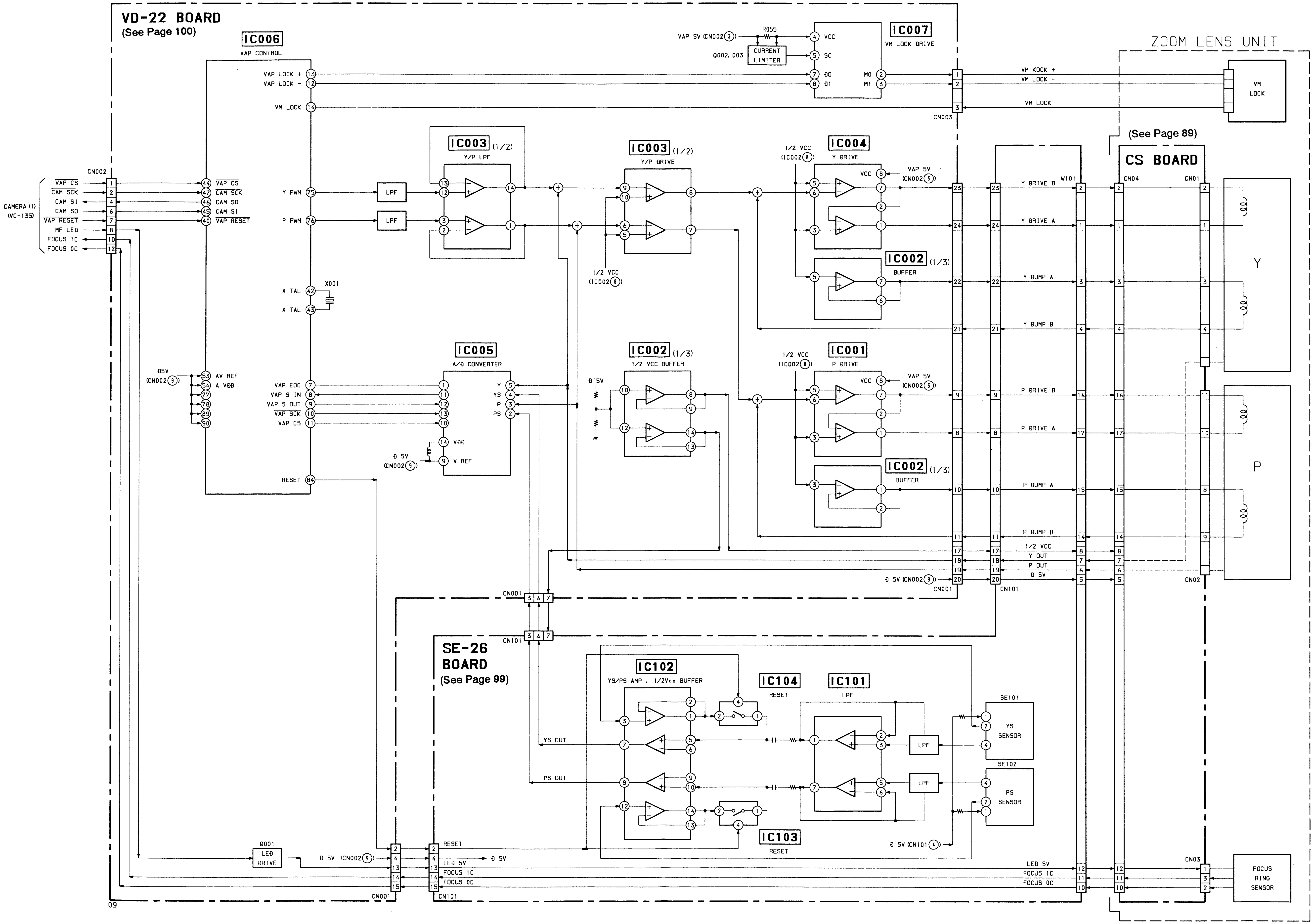

IC803
A/D BIAS AMP
IC802
A/D CONVERTER
IC708
CAMERA CORE
(DIGITAL CAMERA PROCESS)
CLAMP
DRIVE
VCLP
V IN H
V IN L
V REF BS
V REF B
VREF T
V REF TS
D9 (MSB)
D0 (MSB)
CLK
MCK
CAM 5V
D5V
ABCK
DE
1H DELAY
DELAY
TRAP
DL
HORIZONTAL APERTURE CONPENSATOR
HAP C01
HAP C02
GAIN SELECT
BPF
APCN LEVEL
DETALE
ROM
VH GAIN
CORING
VH SLICE
LPF
VAPCN GAIN
VERTICAL APERTURE COMPENSATOR
INTER FACE
CORE SO
CS CORE
CORE SI
CAM SCK
CORE RESET
AJST
CL
VCK
ABCK
HD
VD
R MATRIX
B MATRIX
Gr Gb WHITE BALANCE
CHROMA GAMMA
GAMMA ROM
R B WHITE BALANCE
R-G/B-G
EFECT
SFC
HUE GAIN
R-Y/B-Y
BURST BLK ADD
ENCODER
PAL NTSC
COL
VBC
D/A CONV
FADER OUT LEVEL
FADER
SET UP
Y GAMMA
SOLAR
WHUITE CLIP
SYNK BLK CHRACTER MIX
C SYNK
C BLK
C VDV
C VDB
V REF Y
V REF C
YTMG
HHLD
BU SW
TIC7
TIC0
CS ST CTMG
LALT
BF
Q706 BUFFER
FL701, 702 LPF
Q708 BUFFER
Q707 BUFFER
4.43MHz BPF
Q709 BUFFER
CN701 FOR CHECK
CAM Y
CAM C
W921
VIDEO (1) (VS-101)
VTR SYNC
FSC
REG H
IC710
SYNC GENERATOR
PB SYNC
HALF H KILLER SPEED DETECT PHASE COMP
AFC
LPF
FDI
602fH VCO
AFCO
LCK
SYNC GENERATOR
760H:760H CCD SYSTEM
510H:510H CCD SYSTEM
IC711
1/4
PHASE COMP
VCO 4FSC (VTR) 5/4 (PAL.CAM) OFF (NTSC.CAM)
1/3 COUNTER
MOSAIC HOLD TIMING
POLAITY
PROD DELAY
CONTROL DATA LATCH
CRTC MASC
PB TITLE CHROMA MODURATOR D/A CONVERTER
PB TITLE COLOR DATA
IC709
TITLER
IC707
TITLE MEMORY
64K S RAM
A0 - A14
I/O 7 - I/O 0
BACKUP Vdd
CS S RAM
TITLE BUSY
CS TITLE
VTR SO
VTR SI
VTR SCK
SYS RESET
CGH
CAM VD
PB V
FLD
TO STBY 1
CS SG
CS SRAM
CS CAM
DATA TO SLAVE
DATA TO MSTR
BACKUP Vcc
ZOOM C
SYSCON
D 5V
CAM 5V
CAM -8.5V
CAM 15V
MT 5V
POWER (DD-58)
W926

3-4. CAMERA (2) BLOCK DIAGRAM

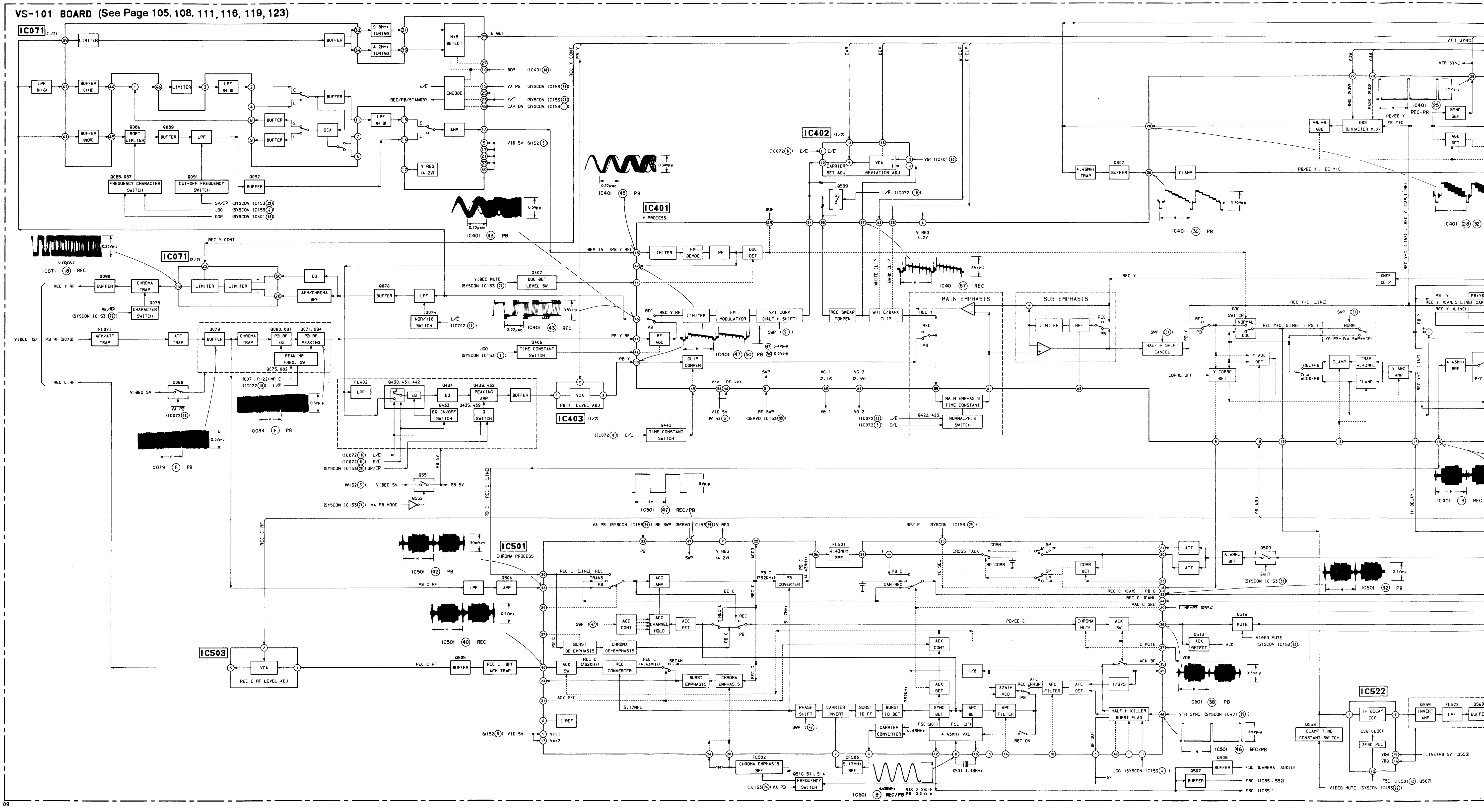


ZOOM LENS UNIT
(See Page 89)
VC-135 BOARD
(See Page 87)
IRIS PWM (IC702 ⑦⑤)
REF 2V (IC705 ⑫)
HALL OUT (IC702 ⑥①)
HALL OFS (IC705 ⑧)
HALL GAIN (IC705 ⑦)
CAMERA (1)
(W) ZOOM FWD (IC702 ④)
(T) ZOOM REV (IC702 ③)
ZOOM SPD (IC705 ⑥)
CAM SI (IC702 ⑦⑨)
CAM SCK (IC702 ⑧①)
CS A/D (IC702 ①⓪⓪)
ZM CK (IC801 ⑤⑦)
FOC IN 4 (IC703 ⑮)
FOC IN 2 (IC703 ⑬)
FOC IN 3 (IC703 ⑭)
FOC IN 1 (IC703 ⑫)
FOC END FAR 1 (IC702 ㉚)
FOC END LED (IC702 ⑧)
FOC END FAR 2 (IC702 ㉙)
LPF
IC853 (1/3)
IC852 (1/2)
IRIS DRIVE
IC852 (1/2)
HALL AMP
IC853 (1/3)
HALL BIAS CONTROL
IC853 (1/3)
HALL GAIN CONTROL
Q853
IC856
ZOOM MOTOR DRIVE
IN 1
IN 2
OUT 1
OUT 2
Vcc
V CONT
Vss
Q855
DRIVE CURRENT LIMITER
MT 5V (W926 ⑦)
IC854
ZOOM POSITION , A/D CONVERTER
A/D SO
A/D SCK
CS A/D
CL
AD IN
A VDD
D VDD
D 5V (W926 ⑤)
D 5V (W926 ⑤)
IC855
FOCUS MOTOR DRIVE
IN 1
IN 2
EN 1
EN 2
A
B
B̄
Ā
Vcc
MT 5V (W926 ⑦)
Q854
LED DRIVE
CN851
DRIVE (+)
DRIVE (-)
CONT (+)
CONT (-)
BIAS (+)
HALL (+)
HALL (-)
BIAS (-)
ZOOM W
ZOOM T
ZP REF
ZOOM ENC
GND
FOCUS MA
FOCUS MB
FOCUS MB̄
FOCUS MĀ
SENS Vcc
ZONE SENSE
LED
EDGE SENS
M904
IRIS METER
H
M906
ZOOM MOTOR
ZOOM POSITION
M905
FOCUS MOTOR
FOCUS END SENSOR
09

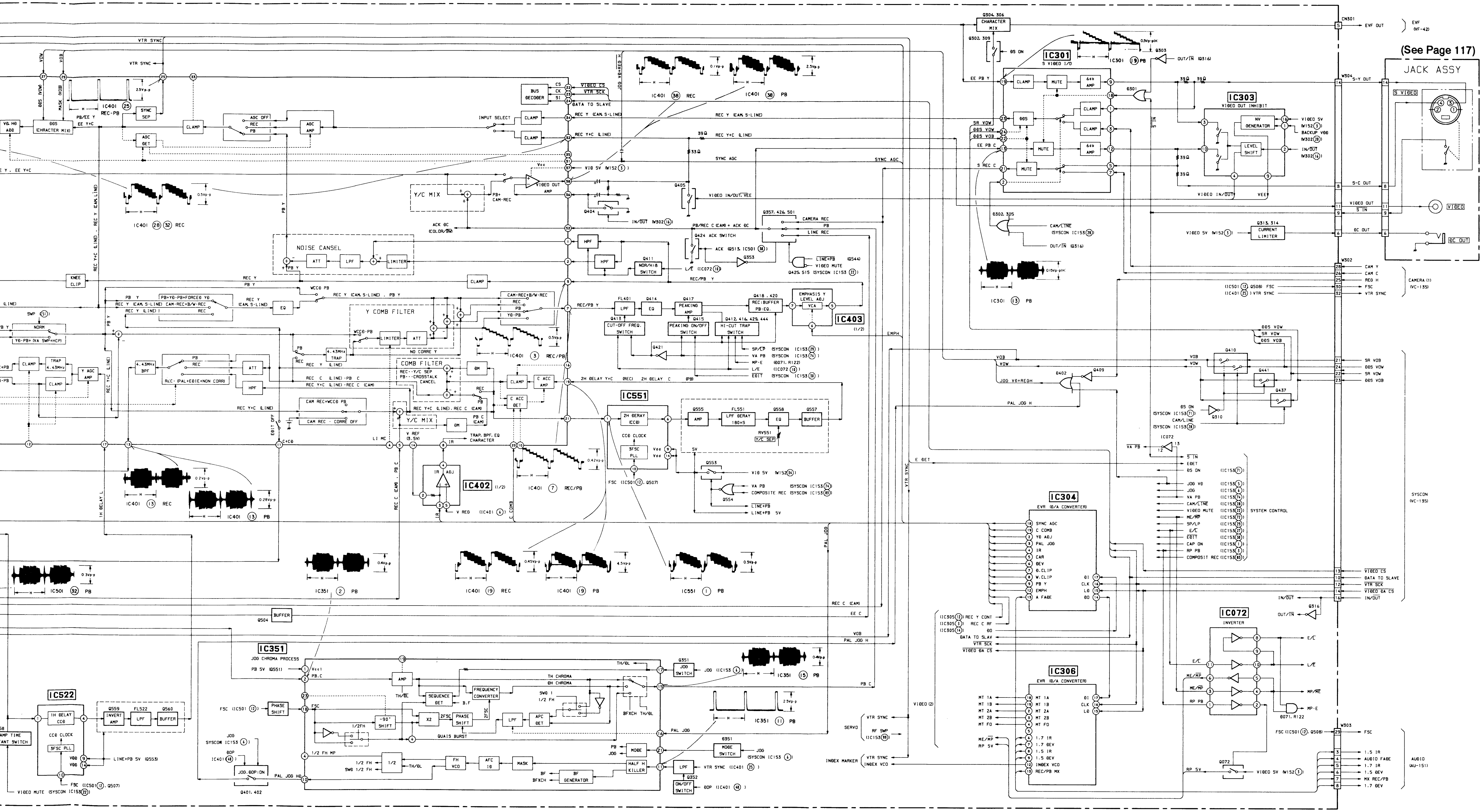
3-5. CAMERA (3) BLOCK DIAGRAM


VD-22 BOARD
(See Page 100)
IC006
VAP CONTROL
VAP LOCK +
VAP LOCK -
VM LOCK
Y PWM
P PWM
X TAL
X TAL
X001
AV REF
A VDD
VAP EOC
VAP S IN
VAP S OUT
VAP SCK
VAP CS
RESET
D5V
(CN002 ⑨)
CN002
VAP CS
CAM SCK
CAM SI
CAM SO
VAP RESET
MF LED
FOCUS IC
FOCUS OC
CAMERA (1)
(VC-135)
IC007
VM LOCK DRIVE
VAP 5V (CN002 ③)
R055
CURRENT LIMITER
Q002, 003
VCC
SC
D0
D1
M0
M1
CN003
IC003 (1/2)
Y/P LPF
LPF
LPF
IC003 (1/2)
Y/P DRIVE
IC004
Y DRIVE
1/2 VCC
(IC002 ⑧)
VCC
VAP 5V
(CN002 ③)
IC002 (1/3)
BUFFER
IC001
P DRIVE
IC002 (1/3)
BUFFER
IC005
A/D CONVERTER
Y
YS
P
PS
VDD
V REF
D 5V
(CN002 ⑨)
IC002 (1/3)
1/2 VCC BUFFER
D 5V
1/2 VCC
(IC002 ⑧)
Y DRIVE B
Y DRIVE A
Y DUMP A
Y DUMP B
P DRIVE B
P DRIVE A
P DUMP A
P DUMP B
1/2 VCC
Y OUT
P OUT
D 5V
D 5V (CN002 ⑨)
CN001
CN101
W101
ZOOM LENS UNIT
VM KOCK +
VM LOCK -
VM LOCK
VM LOCK
(See Page 89)
CS BOARD
CN04
CN01
CN02
CN03
Y
P
FOCUS RING SENSOR
LED 5V
FOCUS IC
FOCUS OC
SE-26 BOARD
(See Page 99)
IC102
YS/PS AMP , 1/2Vcc BUFFER
IC104
RESET
IC101
LPF
IC103
RESET
LPF
LPF
SE101
YS SENSOR
SE102
PS SENSOR
YS OUT
PS OUT
D 5V (CN101 ④)
Q001
LED DRIVE
D 5V (CN002 ⑨)
RESET
D 5V
LED 5V
FOCUS IC
FOCUS OC
CN001
CN101
09

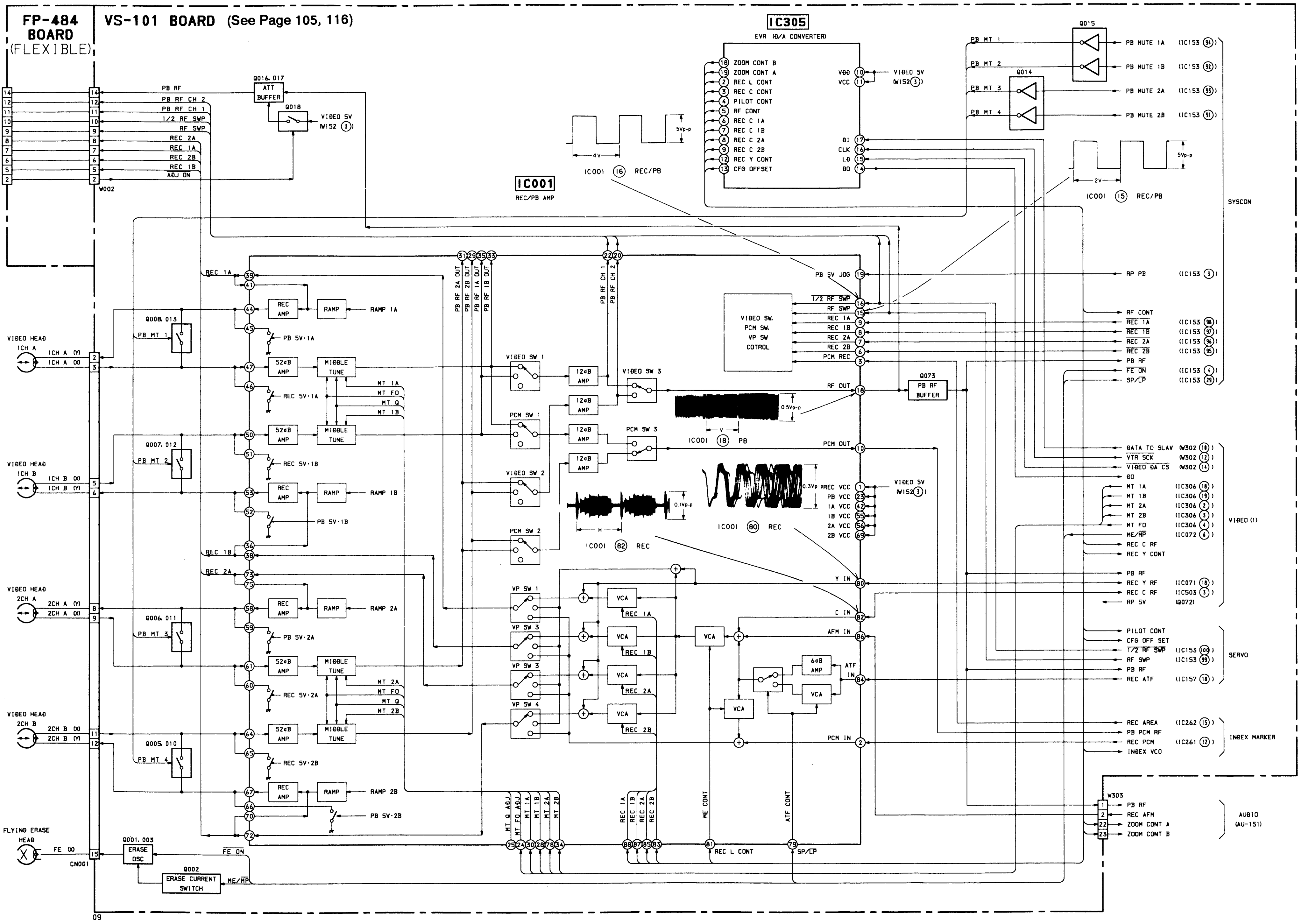
3-6. VIDEO (1) BLOCK DIAGRAM


VS-101 BOARD (See Page 105, 108, 111, 116, 119, 123)
IC071 (1/2)
IC071 (2/2)
IC401
Y PROCESS
IC402 (1/2)
IC403 (1/2)
IC501
CHROMA PROCESS
IC503
IC522
LIMITER
BUFFER
9.8MHz TUNING
4.2MHz TUNING
HI8 DETECT
ENCODE
LPF (HI8)
BUFFER (HI8)
BUFFER (NOR)
SOFT LIMITER
DCA
AMP
V REG (4.2V)
FREQUENCY CHARACTER SWITCH
CUT-OFF FREQUENCY SWITCH
E DET
DOP
VA PB
CAP ON
REC/PB/STANDBY
V10 5V
SP/LP
JOG
REC Y CONT
REC Y RF
CHROMA TRAP
CHARACTER SWITCH
ME/MP
EQ
AFM/CHROMA BPF
VIDEO MUTE
DOC DET LEVEL SW
NOR/HI8 SWITCH
TIME CONSTANT SWITCH
FL071
AFM/ATF TRAP
ATF TRAP
PB RF EQ
PB RF PEAKING
PEAKING FREQ. SW
VIDEO (2)
PB RF
REC C RF
VIDEO 5V
Q084 (E) PB
Q079 (E) PB
FL402
EQ ON/OFF SWITCH
Q SWITCH
PEAKING AMP
VCA
PB Y LEVEL ADJ
FM DEMOD
DOC DET
FM MODULATOR
V/I CONV (HALF H SHIFT)
RF AGC
CLIP COMPEN
REC SMEAR COMPEN
WHITE/DARK CLIP
CARRIER SET ADJ
DEVIATION ADJ
MAIN-EMPHASIS
SUB-EMPHASIS
MAIN EMPHASIS TIME CONSTANT
NORMAL/HI8 SWITCH
HPF
KNEE CLIP
4.43MHz TRAP
CLAMP
HALF H SHIFT CANCEL
DOC SWITCH
NORMAL
Y AGC DET
Y CORRE DET
TRAP 4.43MHz
Y AGC AMP
VG HD ADD
CHRACTER MIX
SYNC SEP
AGC DET
VTR SYNC
PB/EE Y . EE Y+C
IC401 (30) PB
IC401 (57) REC
IC401 (43) PB
IC401 (45) PB
IC401 (43) REC
IC401 (47) (50) PB
IC071 (18) REC
IC501 (47) REC/PB
IC501 (42) PB
IC501 (40) REC
IC501 (38) PB
IC501 (46) REC/PB
IC501 (8) REC/PB
IC501 (32) PB
PB 5V
VA PB MODE
ACC AMP
ACC CONT
ACC CHANNEL HOLD
ACC DET
BURST DE-EMPHASIS
CHROMA DE-EMPHASIS
PB COVERTER
REC CONVERTER
BURST EMPHASIS
CHROMA EMPHASIS
ACK SW
ACK SEC
I REF
REC C RF LEVEL ADJ
REC C BPF AFM TRAP
FL501 4.43MHz BPF
CROSS TALK
CORR DET
CAM-REC
ATT
6.6MHz BPF
CHROMA MUTE
ACK SW
ACK CONT
ACK DET
1/8
375fH VCO
AFC ERROR
AFC FILTER
AFC DET
1/375
HALF H KILLER BURST FLAG
PHASE SHIFT
CARRIER INVERT
BURST 1G FF
BURST 1G DET
SYNC DET
APC DET
APC FILTER
CARRIER CONVERTER
4.43MHz VXO
X501 4.43MHz
FL502 CHROMA EMPHASIS BPF
CF503 5.17MHz BPF
FREQUENCY SWITCH
MUTE
ACK DETECT
1H DELAY CCD
CCD CLOCK
3FSC PLL
CLAMP TIME CONSTANT SWITCH
INVERT AMP
FL522
FSC (CAMERA, AUDIO)

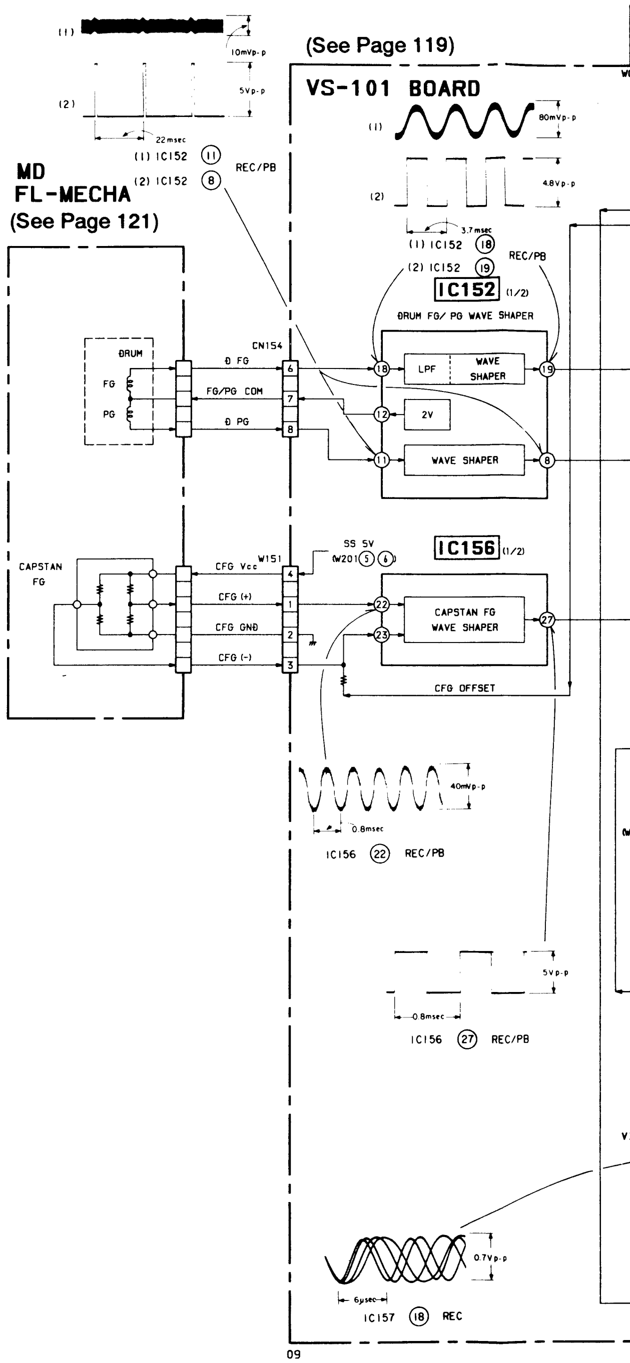
(See Page 117)


JACK ASSY
S VIDEO
VIDEO
DC OUT
CN301
EVF OUT
EVF (VF-42)
Q304, 306 CHARACTER MIX
Q302, 309
BS ON
IC301 S VIDEO I/O
CLAMP
MUTE
6dB AMP
Q301
Q303
OUT/IN (Q316)
IC303 VIDEO OUT INHIBIT
NV GENERATOR
LEVEL SHIFT
VIDEO 5V (W152③)
BACKUP VDD (W302㉑)
IN/OUT (W302⑯)
S-Y OUT
S-C OUT
VIDEO OUT
S IN
DC OUT
Q313, 314 CURRENT LIMITER
VIDEO 5V (W152①)
W302
W304
CAM Y
CAM C
REC H
FSC
VTR SYNC
CAMERA (1) (VC-135)
Q302, 305
CAM/LINE (SYSCON IC153㉙)
IC301 ⑬ PB
IC301 ⑲ PB
Q357, 426, 501
CAMERA REC
PB
LINE REC
Q424 ACK SWITCH
LINE+PB (Q544)
VIDEO MUTE
Q425, 515 (SYSCON IC153 ㉒)
Q353
VTR SYNC
VIDEO CS
VTR SCK
DATA TO SLAVE
BUS DECODER
INPUT SELECT
REC Y (CAM S-LINE)
REC Y+C (LINE)
SYNC AGC
VID 5V (W152③)
VIDEO OUT AMP
Y/C MIX
PB+ CAM·REC
Q404
IN/OUT (W302⑯)
Q405
VIDEO IN/OUT, VEE
ACK DC (COLOR/BW)
IC401 ㉘ REC
IC401 ㊳ PB
IC401 ㉘ ㉜ REC
IC401 ㉕ REC-PB
SYNC SEP
AGC OFF
AGC AMP
AGC DET
CLAMP
DOS (CHARACTER MIX)
NOISE CANSEL
ATT
LPF
LIMITER
HPF
Q411 NOR/H18 SWITCH
L/E (IC072 ⑬)
KNEE CLIP
WCCO PB
Y COMB FILTER
COMB FILTER
REC--Y/C SEP
PB--CROSSTALK CANCEL
NO CORRE Y
4.43MHz TRAP
4.43MHz BPF
CLAMP
TRAP 4.43MHz
Y AGC AMP
EQ
BM
FL401 LPF
Q413 CUT-OFF FREQ. SWITCH
Q414 EQ
Q417 PEAKING AMP
Q415 PEAKING ON/OFF SWITCH
Q412, 416, 429, 444 HI-CUT TRAP SWITCH
Q418, 420 REC:BUFFER PB:EQ.
EMPHASIS Y LEVEL ADJ VCA
IC403 (1/2)
Q421
SP/LP (SYSCON IC153㉖)
VA PB (SYSCON IC153㉔)
MP-E (D071, R122)
L/E (IC072 ⑬)
EDIT (SYSCON IC153㊳)
EMPH
C ACC AMP
C ACC DET
Y/C MIX
IC551
2H DELAY (CCD)
CCD CLOCK
3FSC PLL
Q555 AMP
FL551 LPF DELAY 180nS
Q558 EQ
Q557 BUFFER
RV551 Y/C SEP
Q553
VID 5V (W152㉞)
VA PB (SYSCON IC153㉔)
COMPOSITE REC (SYSCON IC153㊽)
Q554
LINE+PB
LINE+PB 5V
FSC (IC501⑫, Q507)
IC402 (1/2)
IR ADJ
V REF (3.5V)
V REG (IC401 ④)
TRAP, BPF, EQ CHARACTER
IC401 ⑬ REC
IC401 ⑬ PB
IC401 ⑦ REC/PB
IC401 ⑲ REC
IC401 ⑲ PB
IC551 ① PB
IC351 ② PB
IC501 ⑳ PB
1H DELAY L
EDIT OFF
BUFFER
Q504
IC351 JOG CHROMA PROCESS
PB 5V (Q551)
PHASE SHIFT
FSC (IC501 ⑫)
AMP
TH/DL
SEQUENCE DET
FREQUENCY CONVERTER
TH CHROMA
DH CHROMA
1/2FH
-90° SHIFT
X2
2FSC
PHASE SHIFT
LPF
APC DET
SWD 1 1/2 FH
BFXCH TH/DL
QUAIS BURST
1/2 FH MP
1/2
FH VCO
AFC ID
MASK
BF GENERATOR
MODE
HALF H KILLER
Q351 JOG SWITCH
JOG (IC153 ④)
IC351 ⑮ PB
IC351 ⑪ PB
PAL JOG
Q351 MODE SWITCH
JOG (SYSCON IC153 ⑥)
LPF
VTR SYNC (IC401 ㉕)
Q352 ON/OFF SWITCH
DOP (IC401 ㊽)
JOG (SYSCON IC153 ⑥)
DOP (IC401 ㊽)
JOG.DOP:ON
Q401, 402
PAL JOG HD
IC522
1H DELAY CCD
CCD CLOCK
3FSC PLL
Q559 INVERT AMP
FL522 LPF
Q560 BUFFER
LINE+PB 5V (Q553)
FSC (IC501⑫, Q507)
VIDEO MUTE (SYSCON IC153㉒)
AMP TIME
ANT SWITCH
Q410
Q441
Q437
Q402
Q409
JOG VD+REGH
PAL JOG H
BS ON (SYSCON IC153㉑)
CAM/LINE (SYSCON IC153㉙)
Q310
IC072
VA PB
S IN
EDET
BS ON
JOG VD
JOG
VA PB
CAM/LINE
VIDEO MUTE
ME/MP
SP/LP
E/C
EDIT
CAP ON
RP PB
COMPOSIT REC
SYSTEM CONTROL
SYSCON (VC-135)
SR VDB
DOS VDW
SR VDW
DOS VDB
IC304 EVR (D/A CONVERTER)
SYNC AGC
C COMB
YG ADJ
PAL JOG
IR
CAR
DEV
B.CLIP
W.CLIP
PB Y
EMPH
A FADE
DI
CLK
LD
DO
VIDEO CS
DATA TO SLAVE
VTR SCK
VIDEO DA CS
IN/OUT
Q316
IC072 INVERTER
E/C
L/E
MP/ME
MP-E
D071, R122
IC305 REC Y CONT
REC C RF
DATA TO SLAV
VIDEO DA CS
IC306 EVR (D/A CONVERTER)
MT 1A
MT 1B
MT 2A
MT 2B
MT FD
1.7 IR
1.7 DEV
1.5 IR
1.5 DEV
INDEX VCO
REC/PB MX
SERVO
VTR SYNC
RF SWP (IC153㊾)
INDEX MARKER
INDEX VCO
VIDEO (2)
W303
FSC (IC501⑫, Q508)
RP 5V
Q072
VIDEO 5V (W152①)
AUDIO FADE
MX REC/PB
AUDIO (AU-151)

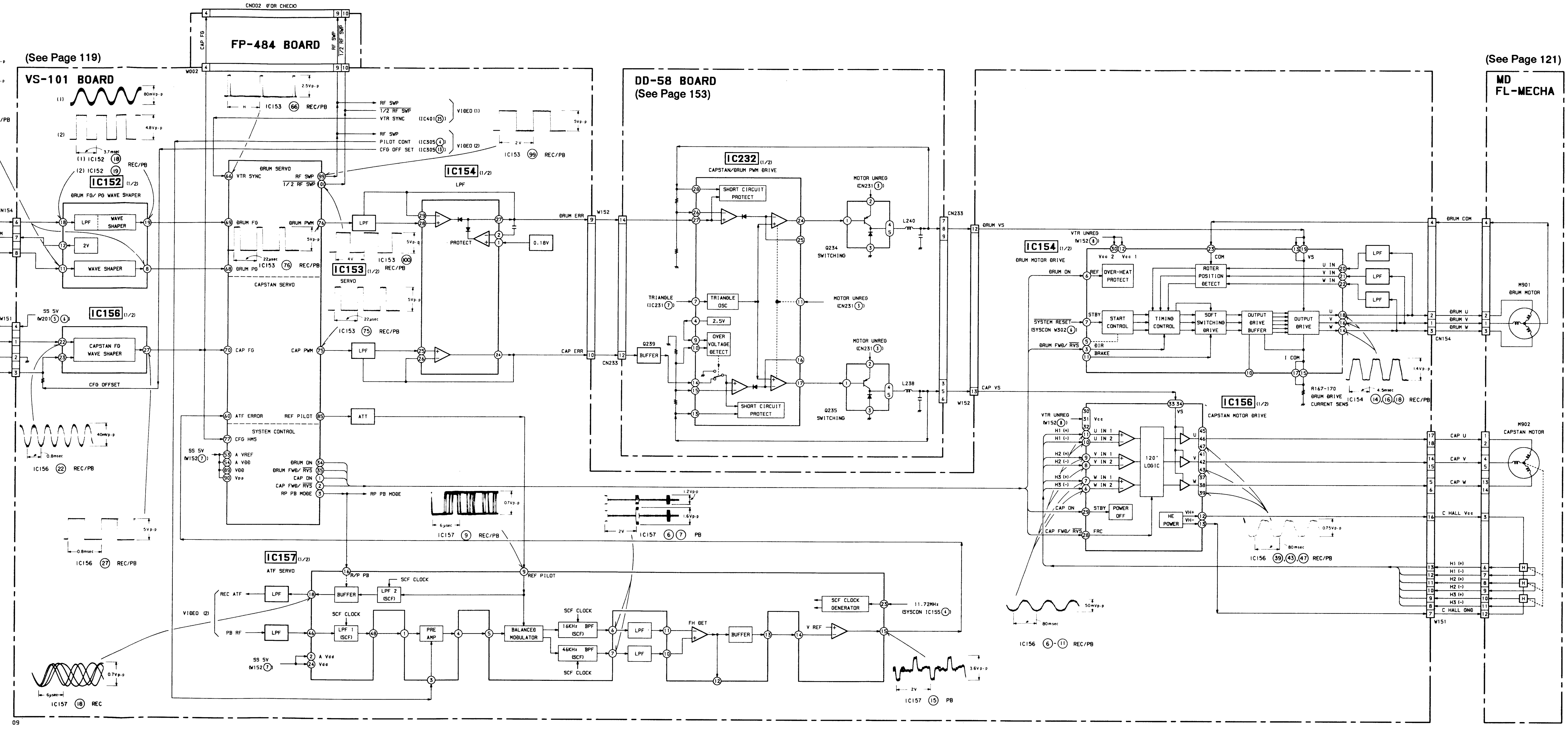
3-7. VIDEO (2) BLOCK DIAGRAM


FP-484 BOARD (FLEXIBLE)
VS-101 BOARD (See Page 105, 116)
CN002 (FOR CHECK)
W002
PB RF
PB RF CH 2
PB RF CH 1
1/2 RF SWP
RF SWP
REC 2A
REC 1A
REC 2B
REC 1B
ADJ ON
Q016, 017 ATT BUFFER
Q018
VIDEO 5V (W152 ③)
IC305
EVR (D/A CONVERTER)
ZOOM CONT B
ZOOM CONT A
REC L CONT
REC C CONT
PILOT CONT
RF CONT
REC C 1A
REC C 1B
REC C 2A
REC C 2B
REC Y CONT
CFG OFFSET
VDD
VCC
DI
CLK
LD
DO
Q015
Q014
PB MT 1
PB MT 2
PB MT 3
PB MT 4
PB MUTE 1A (IC153 (54))
PB MUTE 1B (IC153 (52))
PB MUTE 2A (IC153 (53))
PB MUTE 2B (IC153 (51))
IC001
REC/PB AMP
5Vp-p
4V
IC001 ⑯ REC/PB
2V
IC001 ⑮ REC/PB
SYSCON
VIDEO HEAD 1CH A
1CH A (Y)
1CH A (C)
VIDEO HEAD 1CH B
1CH B (C)
1CH B (Y)
VIDEO HEAD 2CH A
2CH A (Y)
2CH A (C)
VIDEO HEAD 2CH B
2CH B (C)
2CH B (Y)
FLYING ERASE HEAD
FE OO
CN001
Q008, 013
Q007, 012
Q006, 011
Q005, 010
REC AMP
RAMP
RAMP 1A
RAMP 1B
RAMP 2A
RAMP 2B
52dB AMP
MIDDLE TUNE
PB 5V-1A
REC 5V-1A
REC 5V-1B
PB 5V-1B
PB 5V-2A
REC 5V-2A
REC 5V-2B
PB 5V-2B
MT 1A
MT FO
MT Q
MT 1B
MT 2A
MT 2B
PB RF 2A OUT
PB RF 2B OUT
PB RF 1A OUT
PB RF 1B OUT
PB RF CH 1
PB RF CH 2
VIDEO SW 1
VIDEO SW 2
VIDEO SW 3
PCM SW 1
PCM SW 2
PCM SW 3
12dB AMP
VIDEO SW. PCM SW. VP SW COTROL
PB 5V JOG
1/2 RF SWP
RF SWP
PCM REC
RF OUT
PCM OUT
Q073 PB RF BUFFER
0.5Vp-p
IC001 ⑱ PB
0.1Vp-p
IC001 (82) REC
0.3Vp-p
IC001 (80) REC
REC VCC
PB VCC
1A VCC
1B VCC
2A VCC
2B VCC
VIDEO 5V (W152 ③)
Y IN
C IN
AFM IN
ATF IN
PCM IN
VP SW 1
VP SW 2
VP SW 3
VP SW 4
VCA
6dB AMP
RP PB (IC153 ③)
RF CONT
REC 1A (IC153 (58))
REC 1B (IC153 (57))
REC 2A (IC153 (56))
REC 2B (IC153 (55))
PB RF
FE ON (IC153 ④)
SP/LP (IC153 (25))
DATA TO SLAV (W302 ⑱)
VTR SCK (W302 ⑫)
VIDEO DA CS (W302 ⑭)
DD
MT 1A (IC306 ⑱)
MT 1B (IC306 ⑲)
MT 2A (IC306 ②)
MT 2B (IC306 ③)
MT FO (IC306 ④)
ME/MP (IC072 ⑥)
REC C RF
REC Y CONT
VIDEO (1)
PB RF
REC Y RF (IC071 ⑱)
REC C RF (IC503 ③)
RP 5V (Q072)
PILOT CONT
CFG OFF SET
1/2 RF SWP (IC153 (60))
RF SWP (IC153 (59))
PB RF
REC ATF (IC157 ⑱)
SERVO
REC AREA (IC262 ⑮)
PB PCM RF
REC PCM (IC261 ⑫)
INDEX VCO
INDEX MARKER
W303
PB RF
REC AFM
ZOOM CONT A
ZOOM CONT B
AUDIO (AU-151)
MT Q ADJ
MT FO ADJ
MT 1A
MT 1B
MT 2A
MT 2B
REC 1A
REC 1B
REC 2A
REC 2B
ME CONT
ATF CONT
REC L CONT
SP/LP
Q001, 003 ERASE OSC
Q002 ERASE CURRENT SWITCH
FE ON
ME/MP
09

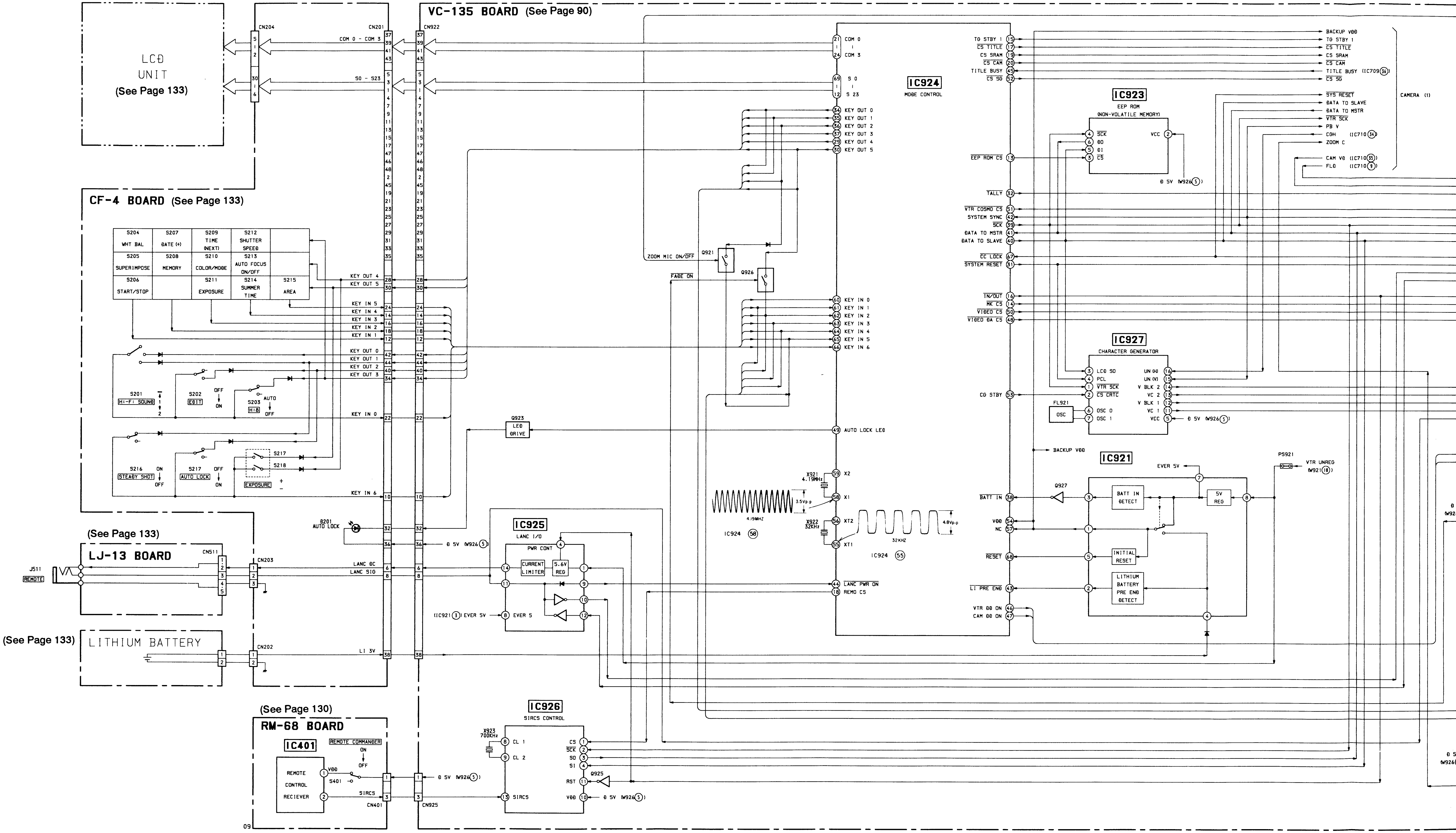
3-8. SERVO BLOCK DIAGRAM

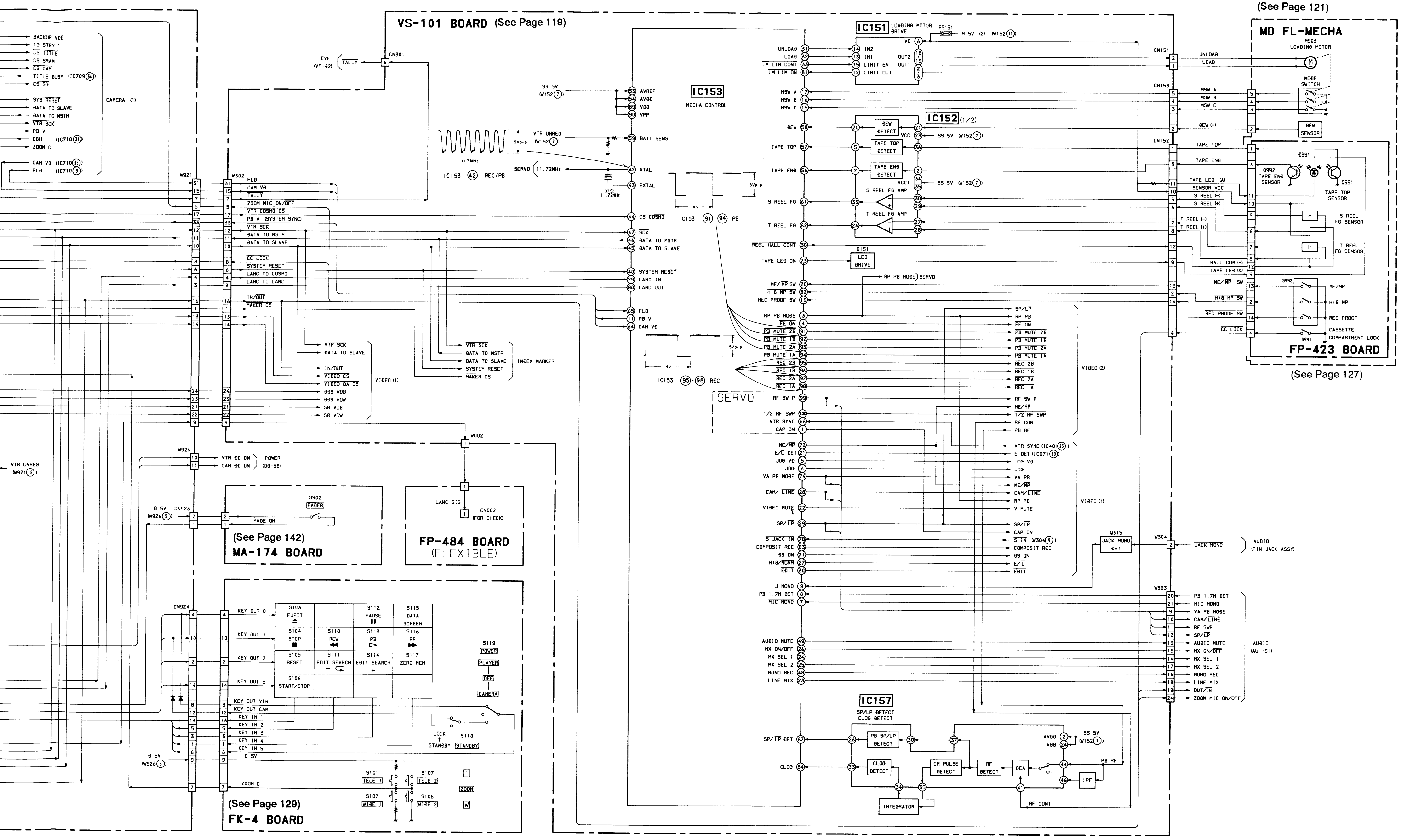

(1)
(2)
10mVp-p
5Vp-p
22msec
(1) IC152 ⑪
(2) IC152 ⑧
REC/PB
(See Page 119)
VS-101 BOARD
80mVp-p
4.8Vp-p
3.7msec
(1) IC152 ⑱
(2) IC152 ⑲
REC/PB
MD FL-MECHA (See Page 121)
IC152 (1/2)
DRUM FG/PG WAVE SHAPER
CN154
D FG
FG/PG COM
D PG
DRUM
FG
PG
LPF
WAVE SHAPER
2V
CAPSTAN FG
W151
CFG Vcc
CFG (+)
CFG GND
CFG (-)
SS 5V (W201 ⑤ ⑥)
IC156 (1/2)
CAPSTAN FG WAVE SHAPER
CFG OFFSET
40mVp-p
0.8msec
IC156 (22) REC/PB
5Vp-p
0.8msec
IC156 (27) REC/PB
0.7Vp-p
6μsec
IC157 ⑱ REC
09

CK DIAGRAM

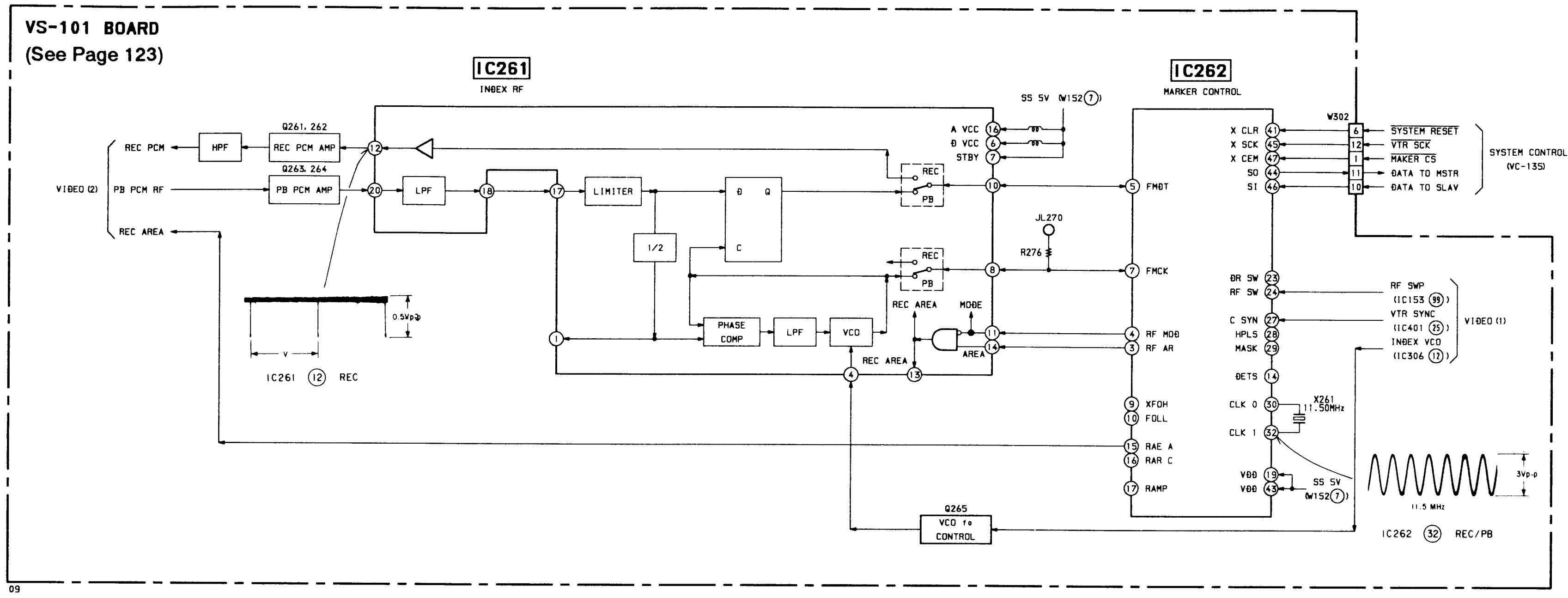

(See Page 119)
VS-101 BOARD
CN002 (FOR CHECK)
FP-484 BOARD
CAP FG
RF SWP
1/2 RF SWP
W002
(1) 80mVp-p
(2) 4.8Vp-p
3.7msec
(1) IC152 ⑱
(2) IC152 ⑲
REC/PB
IC152 (1/2)
DRUM FG/ PG WAVE SHAPER
LPF
WAVE SHAPER
2V
WAVE SHAPER
CN154
W151
SS 5V (W201⑤⑥)
IC156 (1/2)
CAPSTAN FG WAVE SHAPER
CFG OFFSET
40mVp-p
0.8msec
IC156 ㉒ REC/PB
5Vp-p
0.8msec
IC156 ㉗ REC/PB
0.7Vp-p
6μsec
IC157 ⑱ REC
09
2.5Vp-p
H
IC153 (66) REC/PB
RF SWP
1/2 RF SWP
VTR SYNC (IC401㉕)
VIDEO (1)
RF SWP
PILOT CONT (IC305④)
CFG OFF SET (IC305⑬)
VIDEO (2)
5Vp-p
2V
IC153 (99) REC/PB
DRUM SERVO
VTR SYNC
DRUM FG
DRUM PWM
DRUM PG
5Vp-p
22μsec
IC153 (76) REC/PB
CAPSTAN SERVO
4V
IC153 (100) REC/PB
IC153 (1/2)
SERVO
5Vp-p
22μsec
IC153 (75) REC/PB
CAP FG
CAP PWM
ATF ERROR
REF PILOT
ATT
SYSTEM CONTROL
CFG HMS
SS 5V (W152⑦)
A VREF
A VDD
VDD
Vpp
DRUM ON
DRUM FWD/ RVS
CAP ON
CAP FWD/ RVS
RP PB MODE
RP PB MODE
IC154 (1/2)
LPF
LPF
PROTECT
0.18V
LPF
DRUM ERR
CAP ERR
W152
CN233
0.7Vp-p
6μsec
IC157 ⑨ REC/PB
1.2Vp-p
1.6Vp-p
2V
IC157 ⑥⑦ PB
IC157 (1/2)
ATF SERVO
R/P PB
REF PILOT
SCF CLOCK
REC ATF
LPF
BUFFER
LPF 2 (SCF)
VIDEO (2)
PB RF
LPF
SCF CLOCK
LPF 1 (SCF)
PRE AMP
BALANCED MODULATOR
SCF CLOCK
16KHz BPF (SCF)
46KHz BPF (SCF)
SCF CLOCK
SS 5V (W152⑦)
A Vdd
Vdd
LPF
LPF
FH DET
BUFFER
V REF
SCF CLOCK GENERATOR
11.72MHz (SYSCON IC155④)
3.6Vp-p
2V
IC157 ⑮ PB
DD-58 BOARD
(See Page 153)
IC232 (1/2)
CAPSTAN/DRUM PWM DRIVE
SHORT CIRCUIT PROTECT
MOTOR UNREG (CN231③)
Q234 SWITCHING
L240
TRIANGLE (IC231⑦)
TRIANGLE OSC
2.5V
OVER VOLTAGE DETECT
MOTOR UNREG (CN231③)
Q239 BUFFER
MOTOR UNREG (CN231③)
SHORT CIRCUIT PROTECT
Q235 SWITCHING
L238
CN233
W152
DRUM VS
CAP VS
IC154 (1/2)
DRUM MOTOR DRIVE
VTR UNREG (W152⑧)
Vcc 2
Vcc 1
COM
VS
DRUM ON
REF
OVER-HEAT PROTECT
ROTER POSITION DETECT
U IN
V IN
W IN
LPF
LPF
LPF
STBY
SYSTEM RESET
(SYSCON W302⑥)
START CONTROL
TIMING CONTROL
SOFT SWITCHING DRIVE
OUTPUT DRIVE BUFFER
OUTPUT DRIVE
U
V
W
DRUM FWD/ RVS
DIR
BRAKE
I COM
R167-170 DRUM DRIVE CURRENT SENS
1.4Vp-p
4.5msec
IC154 ⑭,⑯,⑱ REC/PB
IC156 (1/2)
CAPSTAN MOTOR DRIVE
VTR UNREG (W152⑧)
Vcc
VS
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
U IN 1
U IN 2
V IN 1
V IN 2
W IN 1
W IN 2
120° LOGIC
U
V
W
CAP ON
STBY
POWER OFF
CAP FWD/ RVS
FRC
HE POWER
VH+
VH-
0.75Vp-p
80msec
IC156 ㊴,㊸,㊼ REC/PB
50mVp-p
80msec
IC156 ⑥-⑪ REC/PB
(See Page 121)
MD FL-MECHA
DRUM COM
DRUM U
DRUM V
DRUM W
CN154
M901 DRUM MOTOR
CAP U
CAP V
CAP W
C HALL Vcc
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
C HALL GND
W151
M902 CAPSTAN MOTOR
H

3-9. SYSTEM CONTROL BLOCK DIAGRAM

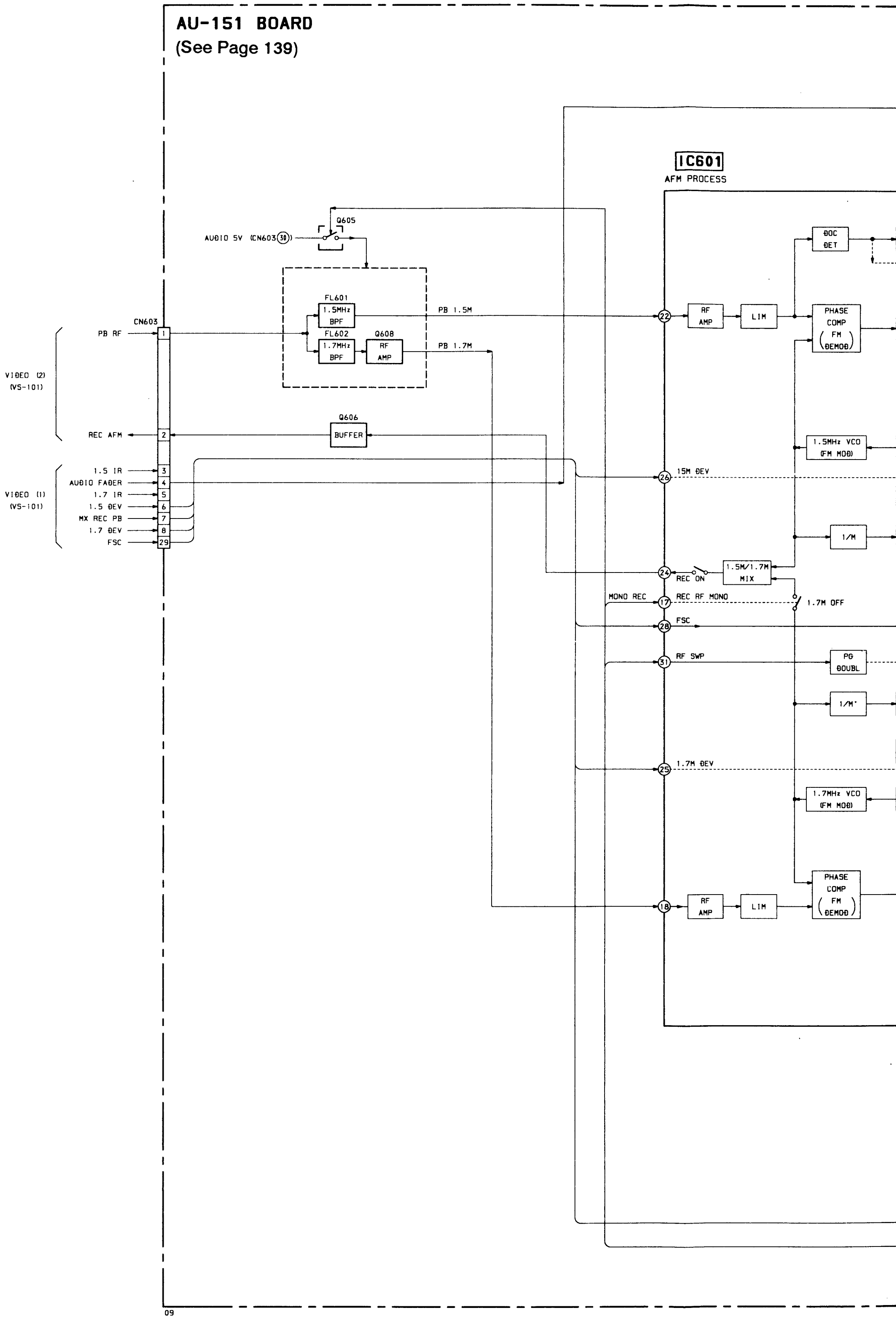

LCD UNIT
(See Page 133)
CN204
CN201
COM 0 - COM 3
S0 - S23
VC-135 BOARD (See Page 90)
CN922
CF-4 BOARD (See Page 133)
S204 WHT BAL
S207 DATE (+)
S209 TIME (NEXT)
S212 SHUTTER SPEED
S205 SUPERIMPOSE
S208 MEMORY
S210 COLOR/MODE
S213 AUTO FOCUS ON/OFF
S206 START/STOP
S211 EXPOSURE
S214 SUMMER TIME
S215 AREA
KEY OUT 4
KEY OUT 5
KEY IN 5
KEY IN 4
KEY IN 3
KEY IN 2
KEY IN 1
KEY OUT 0
KEY OUT 1
KEY OUT 2
KEY OUT 3
KEY IN 0
KEY IN 6
S201 HI-FI SOUND
S202 EDIT
S203 HI8
OFF
ON
AUTO
S216 STEADY SHOT
S217 AUTO LOCK
S217
S218
EXPOSURE
D201 AUTO LOCK
(See Page 133)
LJ-13 BOARD
CN511
CN203
J511 REMOTE
LANC DC
LANC SIG
(See Page 133)
LITHIUM BATTERY
CN202
LI 3V
(See Page 130)
RM-68 BOARD
IC401
REMOTE CONTROL RECIEVER
REMOTE COMMANDER ON OFF
S401
VDD
SIRCS
CN401
CN925
0 5V (W926 ⑤)
ZOOM MIC ON/OFF
FADE ON
Q921
Q926
Q923 LED DRIVE
IC925
LANC I/O
PWR CONT
CURRENT LIMITER
5.6V REG
(IC921 ③) EVER 5V
EVER 5
IC926
SIRCS CONTROL
X923 700KHz
CL 1
CL 2
SIRCS
CS
SCK
SO
SI
RST
VDD
Q925
IC924
MODE CONTROL
COM 0
COM 3
S 0
S 23
KEY OUT 0
KEY OUT 1
KEY OUT 2
KEY OUT 3
KEY OUT 4
KEY OUT 5
KEY IN 0
KEY IN 1
KEY IN 2
KEY IN 3
KEY IN 4
KEY IN 5
KEY IN 6
AUTO LOCK LED
X921 4.19MHz
X2
X1
X922 32KHz
XT2
XT1
3.5Vp-p
4.19MHZ
IC924 (58)
4.8Vp-p
32KHZ
IC924 (55)
LANC PWR ON
REMO CS
TO STBY 1
CS TITLE
CS SRAM
CS CAM
TITLE BUSY
CS SG
EEP ROM CS
TALLY
VTR COSMO CS
SYSTEM SYNC
SCK
DATA TO MSTR
DATA TO SLAVE
CC LOCK
SYSTEM RESET
IN/OUT
MK CS
VIDEO CS
VIDEO DA CS
CG STBY
BATT IN
VDD
NC
RESET
LI PRE END
VTR DD ON
CAM DD ON
IC923
EEP ROM
(NON-VOLATILE MEMORY)
SCK
DO
DI
CS
VCC
0 5V (W926 ⑤)
IC927
CHARACTER GENERATOR
LCD SO
PCL
VTR SCK
CS CRTC
OSC 0
OSC 1
UN DO
UN (V)
V BLK 2
VC 2
V BLK 1
VC 1
VCC
FL921
OSC
BACKUP VDD
IC921
EVER 5V
Q927
BATT IN DETECT
5V REG
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
PS921
VTR UNREG (W921 ⑱)
BACKUP VDD
TO STBY 1
CS TITLE
CS SRAM
CS CAM
TITLE BUSY (IC709 ㉞)
CS SG
SYS RESET
DATA TO SLAVE
DATA TO MSTR
VTR SCK
PB V
COH (IC710 ㉞)
ZOOM C
CAM VD (IC710 ㉟)
FLD (IC710 ⑨)
CAMERA (1)
09

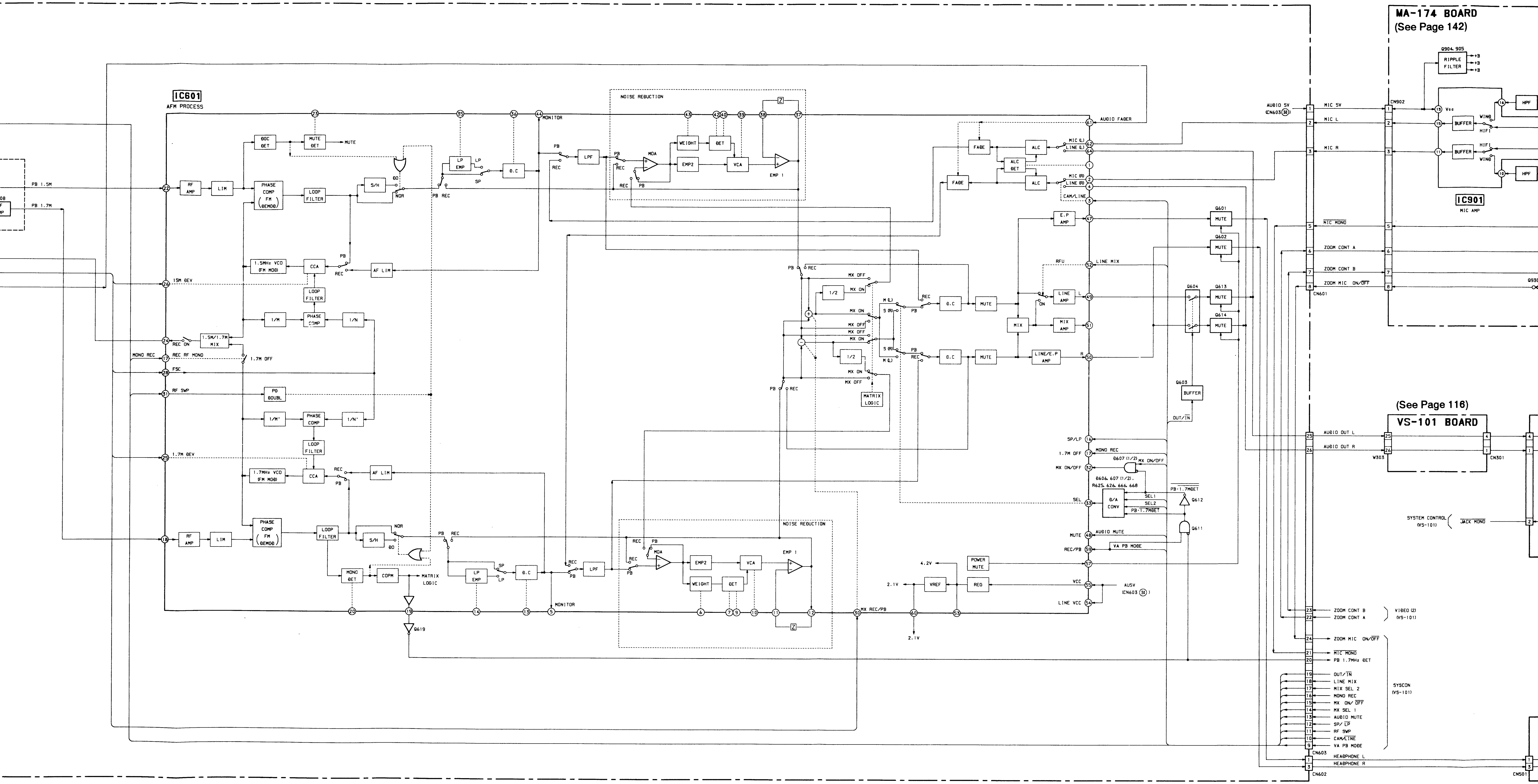

VS-101 BOARD (See Page 119)
(See Page 121)
MD FL-MECHA
M903 LOADING MOTOR
MODE SWITCH
DEW SENSOR
FP-423 BOARD
(See Page 127)
IC151 LOADING MOTOR DRIVE
PS151
IC153 MECHA CONTROL
IC152 (1/2)
DEW DETECT
TAPE TOP DETECT
TAPE END DETECT
S REEL FG AMP
T REEL FG AMP
Q151 LED DRIVE
Q991
Q992 TAPE END SENSOR
TAPE TOP SENSOR
S REEL FG SENSOR
T REEL FG SENSOR
S992
S991
ME/MP
Hi8 MP
REC PROOF
CASSETTE COMPARTMENT LOCK
CN151
CN152
CN153
CN301
EVF (VF-42)
TALLY
CAMERA (1)
W921
W302
W002
W926
W304
W303
CN923
CN924
X151 11.72MHz
IC153 42 REC/PB
IC153 91-94 PB
IC153 95-98 REC
SERVO
VIDEO (1)
VIDEO (2)
INDEX MARKER
POWER (DD-58)
VTR UNREG (W921 18)
Q315 JACK MONO DET
AUDIO (PIN JACK ASSY)
AUDIO (AU-151)
IC157 SP/LP DETECT CLOG DETECT
PB SP/LP DETECT
CLOG DETECT
CR PULSE DETECT
RF DETECT
DCA
LPF
INTEGRATOR
RF CONT
S902 FADER
FADE ON
(See Page 142)
MA-174 BOARD
LANC S10
CN002 (FOR CHECK)
FP-484 BOARD (FLEXIBLE)
S103 EJECT
S112 PAUSE
S115 DATA SCREEN
S104 STOP
S110 REW
S113 PB
S116 FF
S105 RESET
S111 EDIT SEARCH
S114 EDIT SEARCH
S117 ZERO MEM
S106 START/STOP
S119 POWER PLAYER OFF CAMERA
S118 LOCK STANDBY
S101 TELE 1
S107 TELE 2
S102 WIDE 1
S108 WIDE 2
ZOOM
ZOOM C
(See Page 129)
FK-4 BOARD

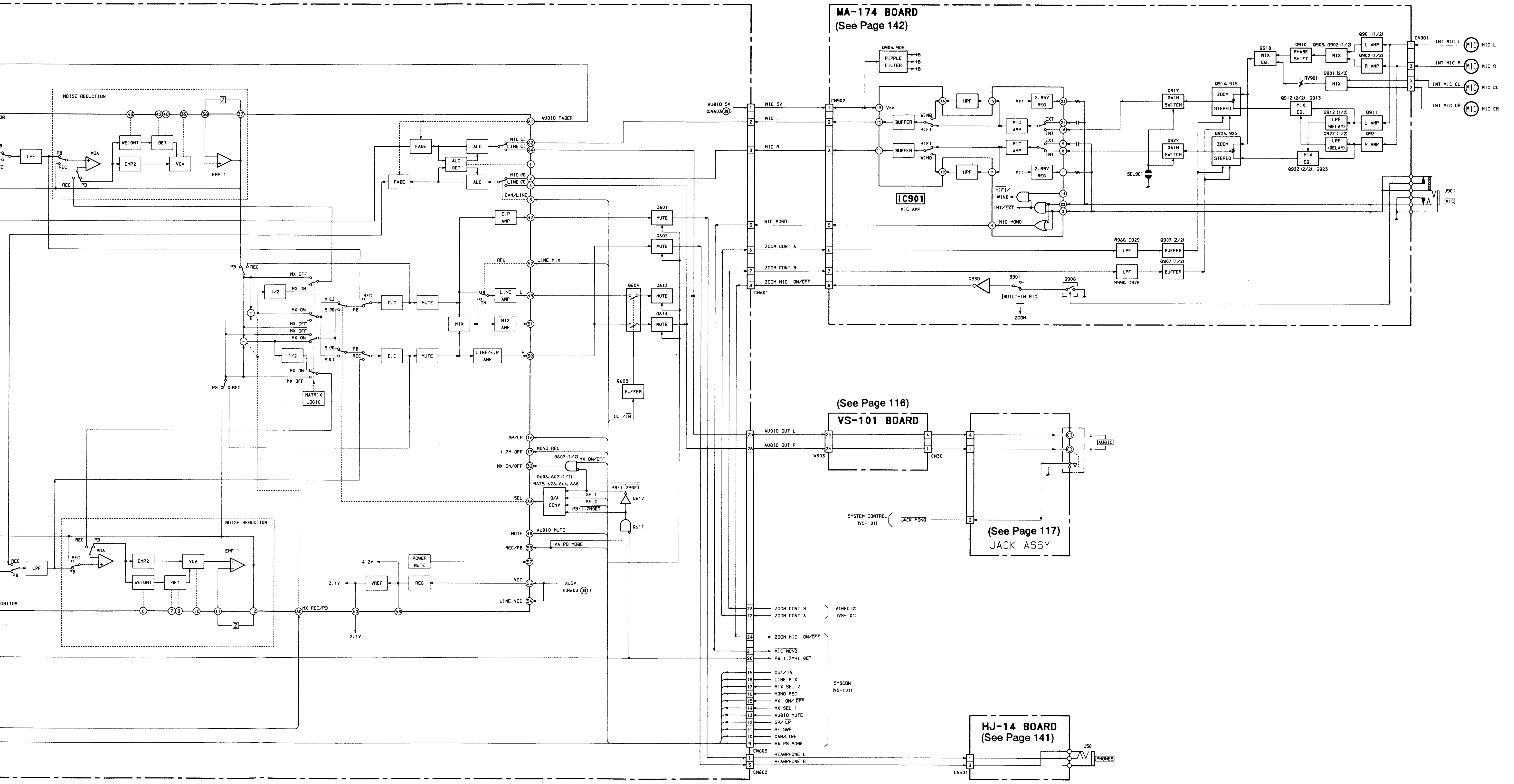
3-10. INDEX MARKER BLOCK DIAGRAM


VS-101 BOARD
(See Page 123)
IC261
INDEX RF
IC262
MARKER CONTROL
VIDEO (2)
REC PCM
PB PCM RF
REC AREA
HPF
Q261, 262
REC PCM AMP
Q263, 264
PB PCM AMP
12
20
LPF
18
17
LIMITER
1/2
D
Q
C
REC
PB
PHASE COMP
LPF
VCO
1
REC AREA
MODE
AREA
REC AREA
4
13
11
14
0.5Vp-p
V
IC261 (12) REC
SS 5V (W152 (7))
A VCC 16
D VCC 6
STBY 7
10
8
JL270
R276
5 FMDT
7 FMCK
4 RF MOD
3 RF AR
9 XFOH
10 FOLL
15 RAE A
16 RAR C
17 RAMP
X CLR 41
X SCK 45
X CEM 47
SO 44
SI 46
DR SW 23
RF SW 24
C SYN 27
HPLS 28
MASK 29
DETS 14
CLK 0 30
CLK 1 32
VDD 19
VDD 43
X261
11.50MHz
SS 5V
(W152 (7))
W302
6
12
1
11
10
SYSTEM RESET
VTR SCK
MAKER CS
DATA TO MSTR
DATA TO SLAV
SYSTEM CONTROL
(VC-135)
RF SWP
(IC153 (99))
VTR SYNC
(IC401 (25))
INDEX VCO
(IC306 (12))
VIDEO (1)
3Vp-p
11.5 MHz
IC262 (32) REC/PB
Q265
VCO fo CONTROL
09

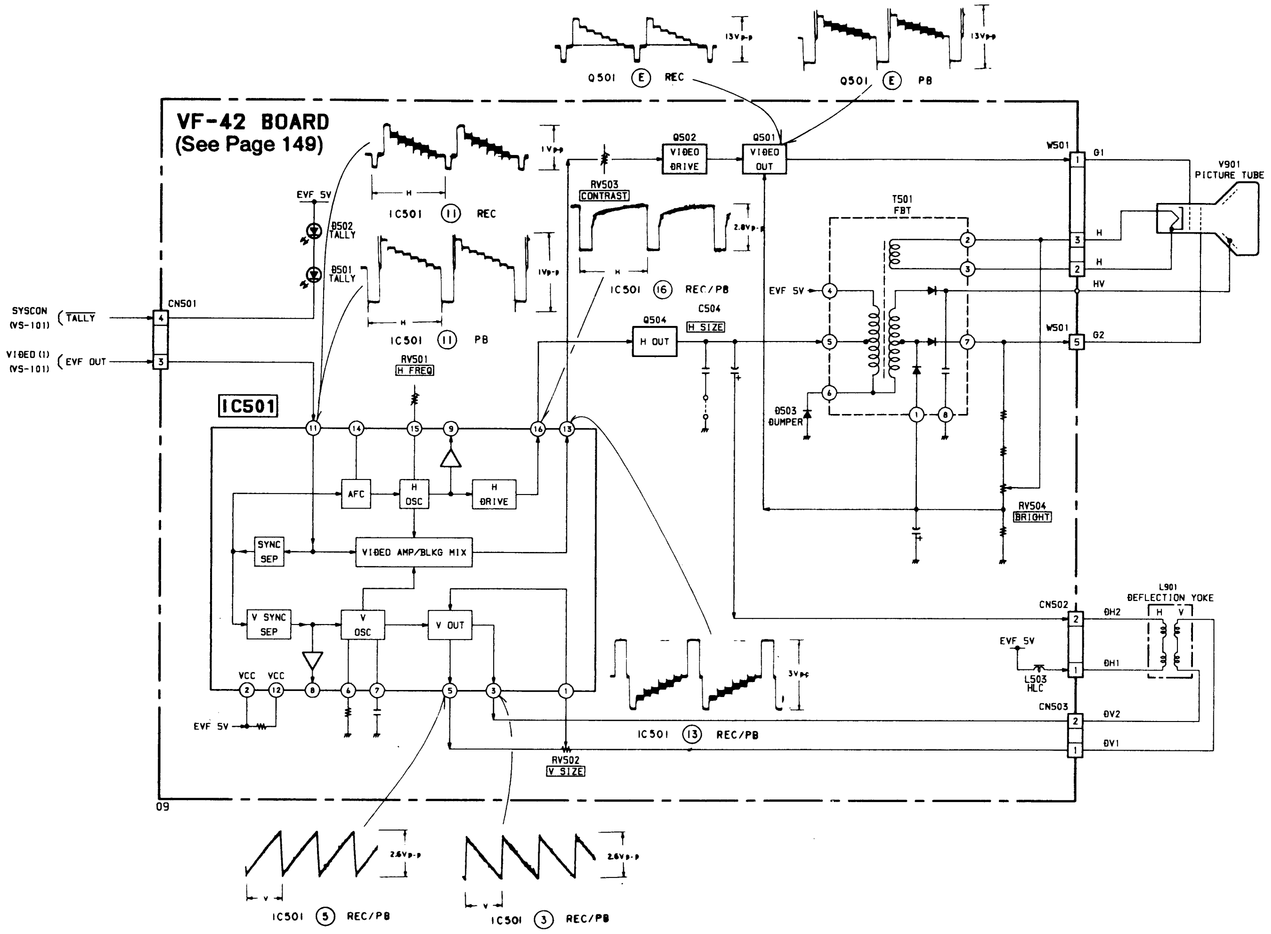
3-11. AUDIO BLOCK DIAGRAM


AU-151 BOARD
(See Page 139)
IC601
AFM PROCESS
AUDIO 5V (CN603 (30))
Q605
FL601
1.5MHz BPF
FL602
1.7MHz BPF
Q608
RF AMP
PB 1.5M
PB 1.7M
CN603
VIDEO (2)
(VS-101)
PB RF
REC AFM
1
2
Q606
BUFFER
VIDEO (1)
(VS-101)
1.5 IR
AUDIO FADER
1.7 IR
1.5 DEV
MX REC PB
1.7 DEV
FSC
3
4
5
6
7
8
29
22
RF AMP
LIM
DOC DET
PHASE COMP
(FM DEMOD)
1.5MHz VCO
(FM MOD)
26
15M DEV
1/M
24
REC ON
1.5M/1.7M MIX
MONO REC
17
REC RF MONO
1.7M OFF
28
FSC
31
RF SWP
PG DOUBL
1/M'
25
1.7M DEV
1.7MHz VCO
(FM MOD)
18
RF AMP
LIM
PHASE COMP
(FM DEMOD)
09

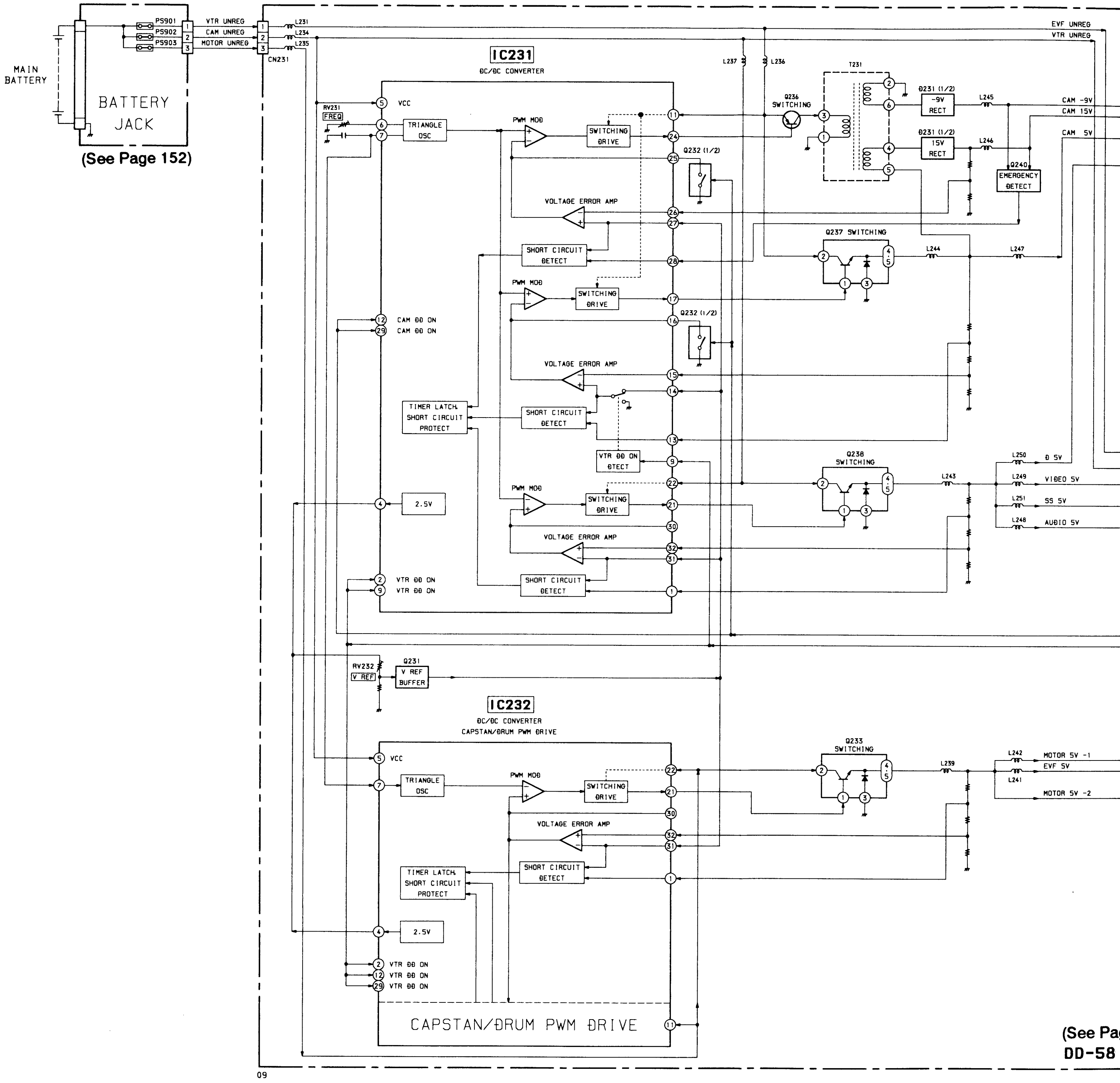

IC601
AFM PROCESS
NOISE REDUCTION
MA-174 BOARD
(See Page 142)
IC901
MIC AMP
Q904, 905
RIPPLE FILTER
BUFFER
HPF
WIND
HIFI
CN902
(See Page 116)
VS-101 BOARD
CN301
W303
CN501
CN601
CN602
CN603
AUDIO SV
CN603 (30)
MIC SV
MIC L
MIC R
MIC MONO
ZOOM CONT A
ZOOM CONT B
ZOOM MIC ON/OFF
AUDIO OUT L
AUDIO OUT R
SYSTEM CONTROL (VS-101)
JACK MONO
VIDEO (2) (VS-101)
PB 1.7MHz DET
OUT/IN
LINE MIX
MIX SEL 2
MONO REC
MX ON/OFF
MX SEL 1
AUDIO MUTE
SP/LP
RF SWP
CAM/LINE
VA PB MODE
SYSCON (VS-101)
HEADPHONE L
HEADPHONE R
PB 1.5M
PB 1.7M
15M DEV
1.7M DEV
REC ON
MONO REC
REC RF MONO
1.7M OFF
FSC
RF SWP
RF AMP
LIM
PHASE COMP (FM DEMOD)
LOOP FILTER
DOC DET
MUTE DET
MUTE
S/H
DO
NOR
1.5MHz VCO (FM MOD)
1.7MHz VCO (FM MOD)
CCA
AF LIM
1.5M/1.7M MIX
1/M
1/N
1/M'
1/N'
PG DOUBL
MONO DET
COPM
MATRIX LOGIC
Q619
LP EMP
D.C
LPF
MONITOR
MDA
WEIGHT
DET
EMP2
VCA
EMP 1
Z
PB
REC
SP
LP
AUDIO FADER
FADE
ALC
ALC DET
MIC (L)
LINE (L)
MIC (R)
LINE (R)
CAM/LINE
E.P AMP
Q601
Q602
Q603
Q604
Q611
Q612
Q613
Q614
MUTE
BUFFER
LINE MIX
RFU
LINE AMP
MIX AMP
MIX
LINE/E.P AMP
MX OFF
MX ON
1/2
M (L)
S (R)
S (L)
M (R)
MATRIX LOGIC
SP/LP
MONO REC
1.7M OFF
MX ON/OFF
Q607 (1/2)
Q606, 607 (1/2), R625, 626, 666, 668
D/A CONV
SEL
SEL1
SEL2
PB-1.7MDET
AUDIO MUTE
REC/PB
VA PB MODE
4.2V
POWER MUTE
2.1V
VREF
REG
VCC
AU5V (CN603 (31))
LINE VCC
MX REC/PB
OUT/IN

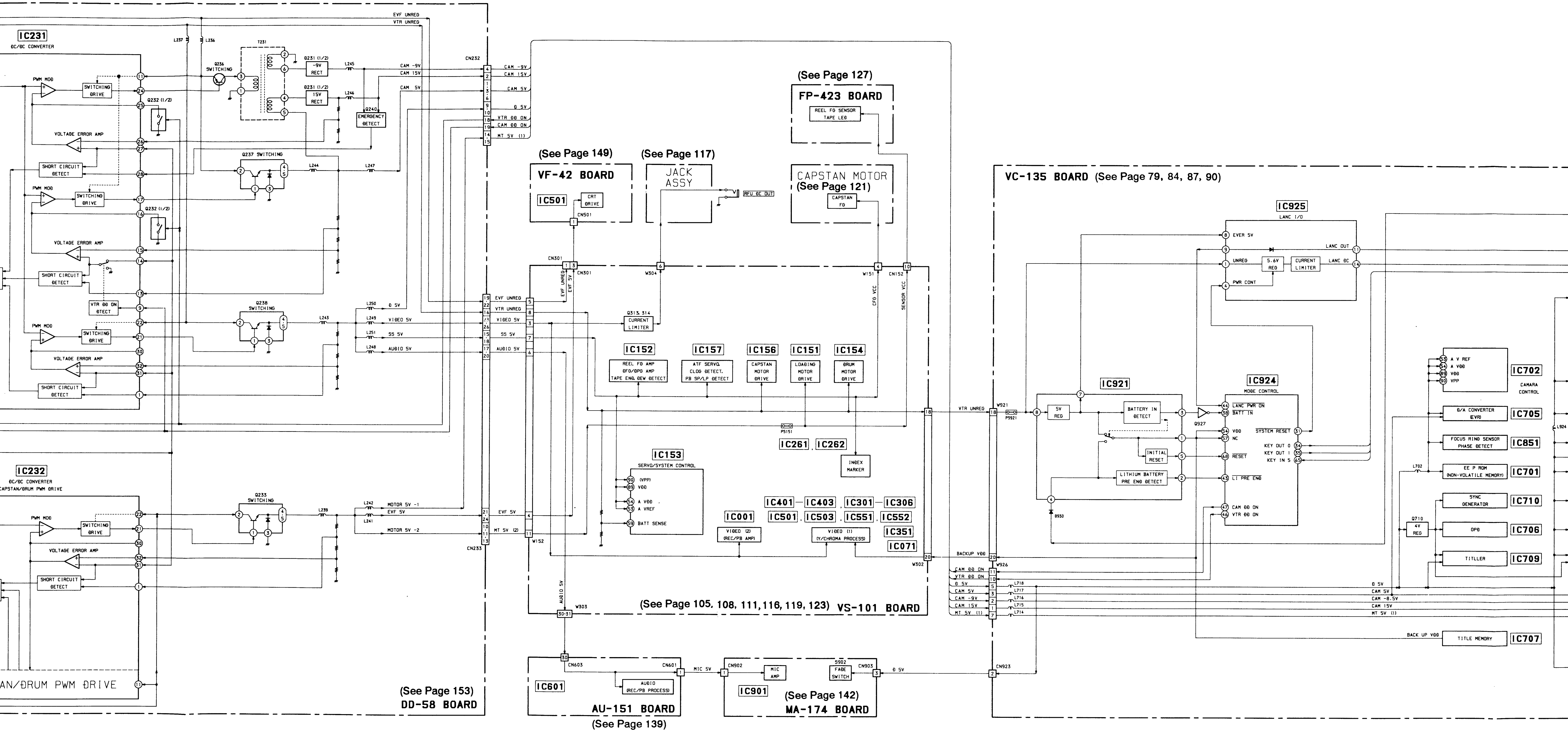

MA-174 BOARD
(See Page 142)
(See Page 116)
VS-101 BOARD
(See Page 117)
JACK ASSY
HJ-14 BOARD
(See Page 141)
NOISE REDUCTION
WEIGHT
DET
VCA
EMP2
EMP 1
MDA
LPF
FADE
ALC
ALC DET
AUDIO FADER
MIC (L)
LINE (L)
MIC (R)
LINE (R)
CAM/LINE
E.P AMP
MUTE
LINE MIX
RFU
LINE AMP
MIX AMP
LINE/E.P AMP
MIX
D.C
1/2
MX OFF
MX ON
MATRIX LOGIC
Q601
Q602
Q603
BUFFER
Q604
Q613
Q614
OUT/IN
SP/LP
1.7M OFF
MONO REC
MX ON/OFF
Q607 (1/2)
Q606, 607 (1/2), R625, 626, 666, 668
D/A CONV
SEL
SEL1
SEL2
PB-1.7MDET
Q612
Q611
MUTE
AUDIO MUTE
REC/PB
VA PB MODE
POWER MUTE
4.2V
2.1V
VREF
REG
VCC
AU5V (CN603 32)
LINE VCC
MX REC/PB
AUDIO 5V (CN603 32)
MIC 5V
MIC L
MIC R
MIC MONO
ZOOM CONT A
ZOOM CONT B
ZOOM MIC ON/OFF
CN601
CN902
Q904, 905
RIPPLE FILTER
+B
Vcc
BUFFER
WIND
HIFI
HPF
2.85V REG
MIC AMP
EXT
INT
HIFI/WIND
INT/EXT
IC901
MIC AMP
Q917
GAIN SWITCH
Q927
SOL901
Q914, 915
ZOOM
STEREO
Q924, 925
Q918
MIX EQ.
Q910
PHASE SHIFT
Q909, Q902 (1/2)
RV901
Q901 (1/2)
L AMP
Q902 (1/2)
R AMP
Q901 (2/2)
Q912 (2/2), Q913
Q912 (1/2)
LPF (DELAY)
Q911
Q922 (1/2)
Q921
Q922 (2/2), Q923
CN901
INT MIC L
INT MIC R
INT MIC CL
INT MIC CR
MIC L
MIC R
MIC CL
MIC CR
J901
MIC
R960, C929
R990, C928
Q907 (2/2)
Q907 (1/2)
Q930
S901
Q908
BUILT-IN MIC
ZOOM
AUDIO OUT L
AUDIO OUT R
W303
CN301
L
R
AUDIO
SYSTEM CONTROL (VS-101)
JACK MONO
ZOOM CONT B
ZOOM CONT A
VIDEO (2) (VS-101)
ZOOM MIC ON/OFF
MIC MONO
PB 1.7MHz DET
OUT/IN
LINE MIX
MIX SEL 2
MONO REC
MX ON/OFF
MX SEL 1
AUDIO MUTE
SP/LP
RF SWP
CAM/LINE
VA PB MODE
SYSCON (VS-101)
CN603
HEADPHONE L
HEADPHONE R
CN602
CN501
J501
PHONES
REC
PB
ON
M (L)
S (R)
M (R)
S (L)

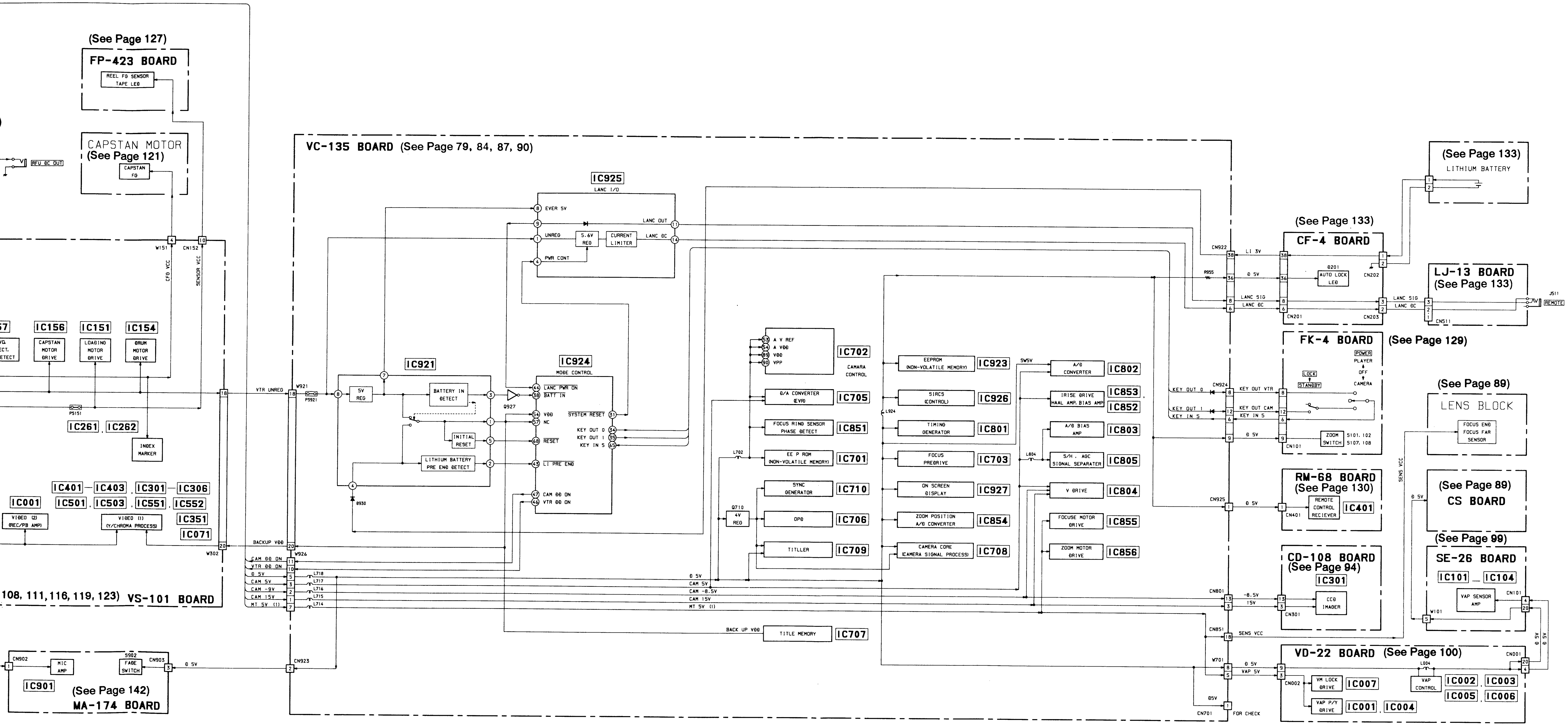
3-12. EVF BLOCK DIAGRAM


VF-42 BOARD
(See Page 149)
IC501
Q501 VIDEO OUT
Q502 VIDEO DRIVE
RV503 CONTRAST
T501 FBT
V901 PICTURE TUBE
Q504 H OUT
C504 H SIZE
D503 DUMPER
RV501 H FREQ
RV504 BRIGHT
RV502 V SIZE
L901 DEFLECTION YOKE
L503 HLC
CN501
CN502
CN503
W501
SYSCON (VS-101) TALLY
VIDEO (1) (VS-101) EVF OUT
D502 TALLY
D501 TALLY
EVF 5V
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
VCC
Q501 Ⓔ REC
Q501 Ⓔ PB
IC501 ⑪ REC
IC501 ⑪ PB
IC501 ⑯ REC/PB
IC501 ⑬ REC/PB
IC501 ⑤ REC/PB
IC501 ③ REC/PB
13Vp-p
1Vp-p
2.8Vp-p
3Vp-p
2.6Vp-p
DH2
DH1
DV2
DV1
HV
09

3-13. POWER BLOCK DIAGRAM


MAIN BATTERY
BATTERY JACK
(See Page 152)
PS901
PS902
PS903
VTR UNREG
CAM UNREG
MOTOR UNREG
CN231
L231
L234
L235
IC231
DC/DC CONVERTER
RV231 FREQ
VCC
TRIANGLE OSC
PWM MOD
SWITCHING DRIVE
VOLTAGE ERROR AMP
SHORT CIRCUIT DETECT
TIMER LATCH, SHORT CIRCUIT PROTECT
VTR DD ON DETECT
2.5V
CAM DD ON
VTR DD ON
Q232 (1/2)
Q236 SWITCHING
T231
Q231 (1/2) -9V RECT
Q231 (1/2) 15V RECT
Q240 EMERGENCY DETECT
Q237 SWITCHING
Q238 SWITCHING
Q233 SWITCHING
EVF UNREG
VTR UNREG
CAM -9V
CAM 15V
CAM 5V
D 5V
VIDEO 5V
SS 5V
AUDIO 5V
MOTOR 5V -1
EVF 5V
MOTOR 5V -2
RV232 V REF
Q231 V REF BUFFER
IC232
DC/DC CONVERTER CAPSTAN/DRUM PWM DRIVE
CAPSTAN/DRUM PWM DRIVE
(See Pa
DD-58
09


IC231
DC/DC CONVERTER
PWM MOD
SWITCHING DRIVE
VOLTAGE ERROR AMP
SHORT CIRCUIT DETECT
VTR DD ON DTECT
Q236 SWITCHING
T231
Q231 (1/2) -9V RECT
Q231 (1/2) 15V RECT
Q232 (1/2)
Q240 EMERGENCY DETECT
Q237 SWITCHING
Q238 SWITCHING
Q233 SWITCHING
L237
L236
L245
L246
L244
L247
L250
L249
L251
L248
L243
L242
L241
L239
EVF UNREG
VTR UNREG
CAM -9V
CAM 15V
CAM 5V
D 5V
VTR DD ON
CAM DD ON
MT 5V (1)
VIDEO 5V
SS 5V
AUDIO 5V
MOTOR 5V -1
EVF 5V
MOTOR 5V -2
MT 5V (2)
CN232
CN233
IC232
DC/DC CONVERTER
CAPSTAN/DRUM PWM DRIVE
AN/DRUM PWM DRIVE
(See Page 153)
DD-58 BOARD
(See Page 149)
VF-42 BOARD
IC501
CRT DRIVE
CN501
(See Page 117)
JACK ASSY
RFU DC OUT
(See Page 127)
FP-423 BOARD
REEL FG SENSOR TAPE LED
CAPSTAN MOTOR
(See Page 121)
CAPSTAN FG
CN301
W304
W151
CN152
EVF UNREG
EVF 5V
CFG VCC
SENSOR VCC
Q313, 314 CURRENT LIMITER
IC152
REEL FG AMP DFG/DPG AMP TAPE END, DEW DETECT
IC157
ATF SERVO, CLOG DETECT, PB SP/LP DETECT
IC156
CAPSTAN MOTOR DRIVE
IC151
LOADING MOTOR DRIVE
IC154
DRUM MOTOR DRIVE
PS151
IC261, IC262
INDEX MARKER
IC153
SERVO/SYSTEM CONTROL
(VPP)
VDD
A VDD
A VREF
BATT SENSE
IC401 — IC403, IC301 — IC306
IC001
IC501, IC503, IC551, IC552
VIDEO (2) (REC/PB AMP)
VIDEO (1) (Y/CHROMA PROCESS)
IC351
IC071
W152
W302
W303
AUDIO 5V
(See Page 105, 108, 111, 116, 119, 123) VS-101 BOARD
CN603
CN601
IC601
AUDIO (REC/PB PROCESS)
AU-151 BOARD
(See Page 139)
MIC 5V
CN902
MIC AMP
S902 FADE SWITCH
CN903
IC901
(See Page 142)
MA-174 BOARD
VC-135 BOARD (See Page 79, 84, 87, 90)
VTR UNREG
W921
PS921
5V REG
IC921
BATTERY IN DETECT
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
D930
Q927
IC925
LANC I/O
EVER 5V
UNREG
5.6V REG
CURRENT LIMITER
LANC DC
LANC OUT
PWR CONT
IC924
MODE CONTROL
LANC PWR ON
BATT IN
VDD
NC
RESET
LI PRE END
CAM DD ON
VTR DD ON
SYSTEM RESET
KEY OUT 0
KEY OUT 1
KEY IN 5
BACKUP VDD
W926
CN923
L718
L717
L716
L715
L714
CAM -8.5V
A V REF
A VDD
VDD
VPP
IC702
CAMARA CONTROL
D/A CONVERTER (EVR)
IC705
FOCUS RING SENSOR PHASE DETECT
IC851
EE P ROM (NON-VOLATILE MEMORY)
IC701
L702
Q710 4V REG
SYNC GENERATOR
IC710
DPG
IC706
TITLLER
IC709
BACK UP VDD
TITLE MEMORY
IC707
L924

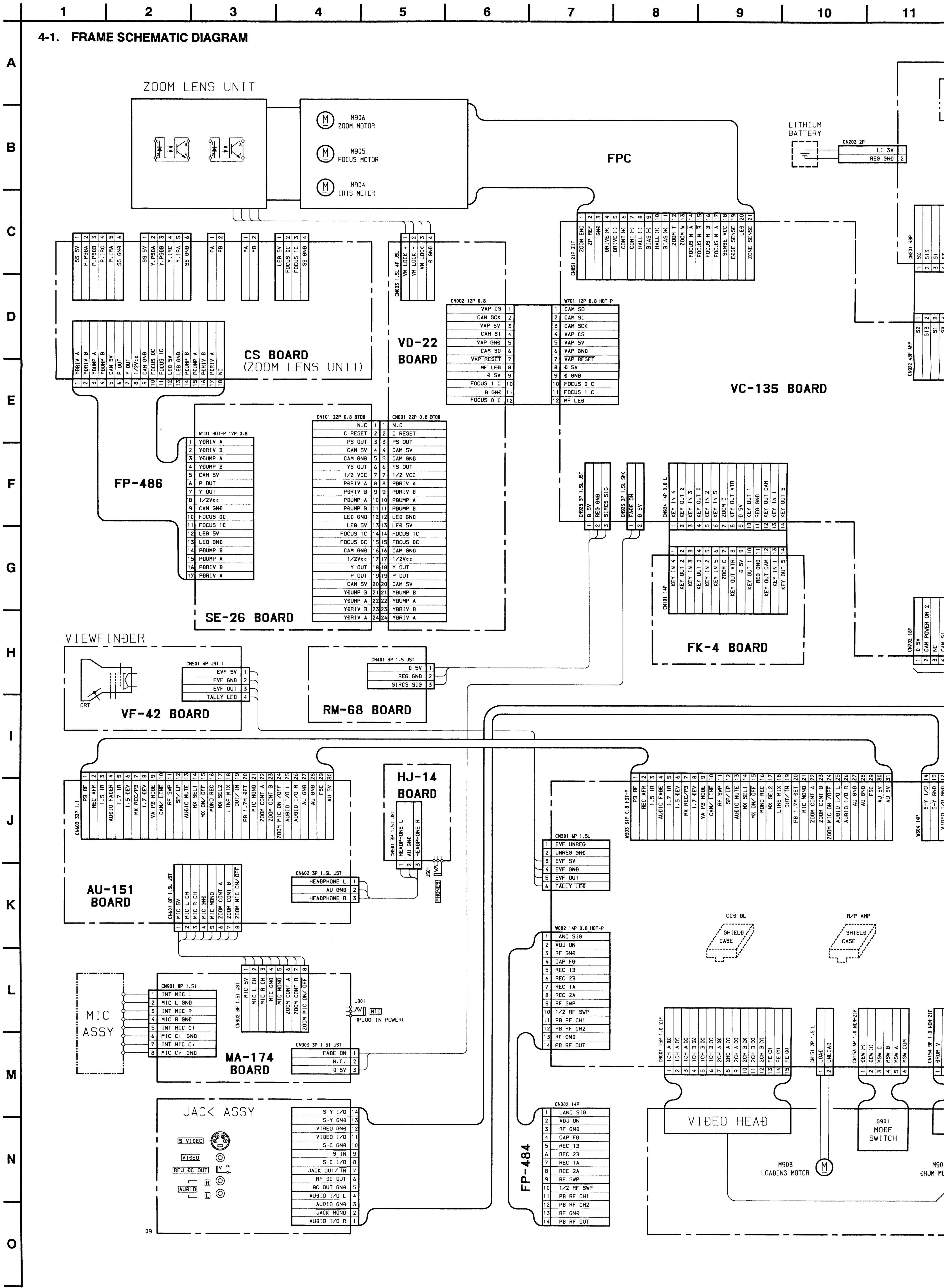


(See Page 127)
FP-423 BOARD
REEL FG SENSOR TAPE LED
CAPSTAN MOTOR
(See Page 121)
CAPSTAN FG
RFU DC OUT
W151
CN152
CFG VCC
SENSOR VCC
IC156
CAPSTAN MOTOR DRIVE
IC151
LOADING MOTOR DRIVE
IC154
DRUM MOTOR DRIVE
PS151
IC261
IC262
INDEX MARKER
IC401
IC403
IC301
IC306
IC001
IC501
IC503
IC551
IC552
VIDEO (2) (REC/PB AMP)
VIDEO (1) (Y/CHROMA PROCESS)
IC351
IC071
W302
108, 111, 116, 119, 123) VS-101 BOARD
VTR UNREG
BACKUP VDD
CAM DD ON
VTR DD ON
D 5V
CAM 5V
CAM -9V
CAM 15V
MT 5V (1)
CN902
MIC AMP
S902
FADE SWITCH
CN903
D 5V
IC901
(See Page 142)
MA-174 BOARD
VC-135 BOARD (See Page 79, 84, 87, 90)
W921
PS921
W926
L718
L717
L716
L715
L714
CN923
IC925
LANC I/O
EVER 5V
UNREG
PWR CONT
5.6V REG
CURRENT LIMITER
LANC OUT
LANC DC
IC921
5V REG
BATTERY IN DETECT
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
Q927
D930
IC924
MODE CONTROL
LANC PWR ON
BATT IN
VDD
NC
RESET
LI PRE END
CAM DD ON
VTR DD ON
SYSTEM RESET
KEY OUT 0
KEY OUT 1
KEY IN 5
A V REF
A VDD
VDD
VPP
IC702
CAMERA CONTROL
D/A CONVERTER (EVR)
IC705
FOCUS RING SENSOR PHASE DETECT
IC851
L702
EE P ROM (NON-VOLATILE MEMORY)
IC701
SYNC GENERATOR
IC710
Q710
4V REG
OPD
IC706
TITLLER
IC709
D 5V
CAM 5V
CAM -8.5V
CAM 15V
MT 5V (1)
BACK UP VDD
TITLE MEMORY
IC707
EEPROM (NON-VOLATILE MEMORY)
IC923
SIRCS (CONTROL)
IC926
L924
TIMING GENERATOR
IC801
FOCUS PREDRIVE
IC703
ON SCREEN DISPLAY
IC927
ZOOM POSITION A/D CONVERTER
IC854
CAMERA CORE (CAMERA SIGNAL PROCESS)
IC708
SW5V
A/D CONVERTER
IC802
IRISE DRIVE HAAL AMP, BIAS AMP
IC853
IC852
A/D BIAS AMP
IC803
L804
S/H, AGC SIGNAL SEPARATER
IC805
V DRIVE
IC804
FOCUSE MOTOR DRIVE
IC855
ZOOM MOTOR DRIVE
IC856
CN922
R955
LI 3V
D 5V
LANC SIG
LANC DC
CN924
KEY OUT 0
KEY OUT 1
KEY IN 5
CN925
CN801
-8.5V
15V
CN851
SENS VCC
W701
D 5V
VAP 5V
D5V
CN701
FOR CHECK
(See Page 133)
LITHIUM BATTERY
(See Page 133)
CF-4 BOARD
D201
AUTO LOCK LED
CN202
CN201
CN203
LJ-13 BOARD
(See Page 133)
LANC SIG
LANC DC
J511
REMOTE
CN511
FK-4 BOARD
(See Page 129)
POWER
PLAYER
OFF
CAMERA
LOCK
STANDBY
KEY OUT VTR
KEY OUT CAM
KEY IN 5
D 5V
ZOOM SWITCH
S101, 102
S107, 108
CN101
(See Page 89)
LENS BLOCK
FOCUS END
FOCUS FAR
SENSOR
SENS VCC
RM-68 BOARD
(See Page 130)
REMOTE CONTROL RECIEVER
IC401
CN401
D 5V
(See Page 89)
CS BOARD
(See Page 99)
SE-26 BOARD
IC101
IC104
VAP SENSOR AMP
CN101
W101
CD-108 BOARD
(See Page 94)
IC301
CCD IMAGER
CN301
D 5V
D 5V
VD-22 BOARD
(See Page 100)
CN001
CN002
VM LOCK DRIVE
IC007
L004
VAP CONTROL
IC002
IC003
IC005
IC006
VAP P/Y DRIVE
IC001
IC004

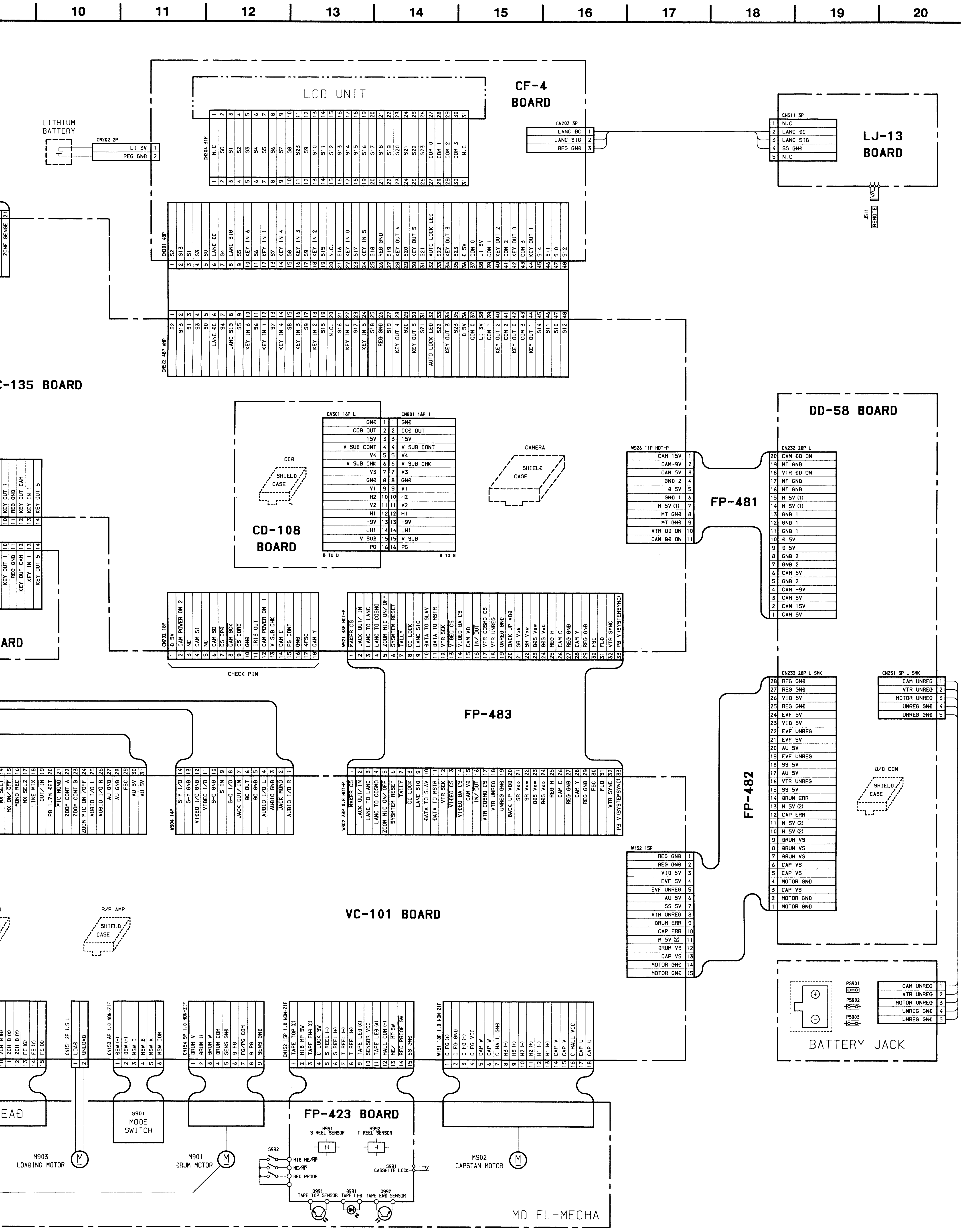
SECTION 4

PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM



ZOOM LENS UNIT
M906 ZOOM MOTOR
M905 FOCUS MOTOR
M904 IRIS METER
FPC
LITHIUM BATTERY
CN202 2P
LI 3V
REG GND
CS BOARD (ZOOM LENS UNIT)
VD-22 BOARD
CN003 1.5L 4P JSL
VM LOCK +
VM LOCK -
VM LOCK
θ GND
CN002 12P 0.8
VAP CS
CAM SCK
VAP 5V
CAM SI
VAP GND
CAM SO
VAP RESET
MF LED
θ 5V
FOCUS 1 C
θ GND
FOCUS 0 C
W701 12P 0.8 HOT-P
CN851 21P ZIF
ZOOM ENC
ZP REF
GND
DRIVE (+)
DRIVE (-)
CONT (+)
CONT (-)
HALL (-)
BIAS (-)
HALL (+)
BIAS (+)
ZOOM T
ZOOM W
FOCUS M A
FOCUS M B
SENSE VCC
EDGE SENSE
LED
ZONE SENSE
VC-135 BOARD
FP-486
W101 HOT-P 17P 0.8
YDRIV A
YDRIV B
YDUMP A
YDUMP B
CAM 5V
P OUT
Y OUT
1/2Vcc
CAM GND
FOCUS 0C
FOCUS 1C
LED 5V
LED GND
PDUMP B
PDUMP A
PDRIV B
PDRIV A
NC
SE-26 BOARD
CN101 22P 0.8 BTOB
CN001 22P 0.8 BTOB
N.C
C RESET
PS OUT
YS OUT
1/2 VCC
CN925 3P 1.5L JST
θ 5V
REG GND
SIRCS SIG
CN923 2P 1.5L SMK
FADE ON
CN924 14P 0.8 L
KEY IN 4
KEY OUT 2
KEY IN 3
KEY OUT 0
KEY IN 2
KEY IN 5
ZOOM C
KEY OUT VTR
KEY OUT 1
REG GND
KEY OUT CAM
KEY IN 1
KEY OUT 5
CN101 14P
FK-4 BOARD
CN201 48P
CN922 48P AMP
CN702 18P
CAM POWER ON 2
VIEWFINDER
CRT
CN501 4P JST I
EVF 5V
EVF GND
EVF OUT
TALLY LED
VF-42 BOARD
CN401 3P 1.5 JST
RM-68 BOARD
HJ-14 BOARD
CN501 3P 1.5I JST
HEADPHONE L
AU GND
HEADPHONE R
J501
PHONES
CN603 32P 1.1
PB RF
REC AFM
1.5 IR
AUDIO FADER
1.5 DEV
MX REC/PB
1.7 DEV
VA PB MODE
CAM/ LINE
RF SWP
SP/LP
AUDIO MUTE
MX SEL1
MX ON/ OFF
MONO REC
MX SEL2
LINE MIX
OUT/ IN
PB 1.7M DET
MIC MONO
ZOOM CONT A
ZOOM CONT B
ZOOM MIC ON /OFF
AUDIO I/O L
AUDIO I/O R
AU GND
FSC
AU 5V
AU-151 BOARD
CN602 3P 1.5L JST
CN601 8P 1.5L JST
MIC 5V
MIC L CH
MIC R CH
MIC GND
MIC MONO
W303 31P 0.8 HOT-P
CN301 6P 1.5L
EVF UNREG
UNREG GND
EVF 5V
EVF GND
EVF OUT
TALLY LED
W002 14P 0.8 HOT-P
LANC SIG
ADJ ON
RF GND
CAP FG
REC 1B
REC 2B
REC 1A
REC 2A
RF SWP
1/2 RF SWP
PB RF CH1
PB RF CH2
PB RF OUT
W504 14P
S-Y I/O
S-Y GND
VIDEO I/O
CCD BL
SHIELD CASE
R/P AMP
MIC ASSY
CN901 8P 1.5I
INT MIC L
MIC L GND
INT MIC R
MIC R GND
INT MIC Cl
MIC Cl GND
INT MIC Cr
MIC Cr GND
CN902 8P 1.5I JST
J901
MIC (PLUG IN POWER)
MA-174 BOARD
CN903 3P 1.5I JST
FADE ON
N.C.
θ 5V
JACK ASSY
S VIDEO
VIDEO
RFU DC OUT
AUDIO
R
L
S-Y I/O
S-Y GND
VIDEO GND
VIDEO I/O
S-C GND
S IN
S-C I/O
JACK OUT/ IN
RF DC OUT
DC OUT GND
AUDIO I/O L
AUDIO GND
JACK MONO
AUDIO I/O R
09
FP-484
CN002 14P
CN001 15P 1.0 ZIF
1CH A (Ø)
1CH A (Y)
1CH A (X)
1CH B (Ø)
1CH B (X)
1CH B (Y)
2CH A (Ø)
2HC A (Y)
2CH B (Ø)
2CH B (X)
2CH B (Y)
FE (Ø)
FE (Y)
FE (X)
CN151 2P 1.5 L
LOAD
UNLOAD
CN153 6P 1.0 NON-ZIF
DEW (+)
DEW (-)
MSW C
MSW B
MSW A
MSW COM
CN154 5P 1.0 NON-ZIF
DRUM V
VIDEO HEAD
S901 MODE SWITCH
M903 LOADING MOTOR
M90
DRUM MO


10
11
12
13
14
15
16
17
18
19
20
LCD UNIT
CF-4 BOARD
LITHIUM BATTERY
CN202 2P
LI 3V
REG GND
CN204 31P
CN203 3P
LANC DC
LANC SIG
REG GND
CN511 3P
N.C
LANC DC
LANC SIG
SS GND
N.C
LJ-13 BOARD
J511 REMOTE
CN201 48P
CN922 48P AMP
ZONE SENSE
C-135 BOARD
CN301 16P L
CN801 16P I
GND
CCD OUT
15V
V SUB CONT
V4
V SUB CHK
V3
GND
V1
H2
V2
H1
-9V
LH1
V SUB
PG
B TO B
CCD SHIELD CASE
CD-108 BOARD
CAMERA SHIELD CASE
W926 11P HOT-P
CAM 15V
CAM -9V
CAM 5V
GND 2
D 5V
GND 1
M 5V (1)
MT GND
VTR DD ON
CAM DD ON
FP-481
DD-58 BOARD
CN232 20P L
CN702 18P
CHECK PIN
W921 33P HOT-P
FP-483
W302 33P 0.8 HOT-P
W904 14P
CN233 28P L SMK
CN231 5P L SMK
CAM UNREG
VTR UNREG
MOTOR UNREG
UNREG GND
FP-482
D/D CON SHIELD CASE
W152 15P
R/P AMP SHIELD CASE
VC-101 BOARD
PS901
PS902
PS903
BATTERY JACK
CN151 2P 1.5 L
LOAD
UNLOAD
CN153 6P 1.0 NON-ZIF
CN154 9P 1.0 NON-ZIF
CN152 15P 1.0 NON-ZIF
W151 18P 1.0 NON-ZIF
HEAD
S901 MODE SWITCH
FP-423 BOARD
H991 S REEL SENSOR
H992 T REEL SENSOR
S992
HI8 ME/MP
ME/MP
REC PROOF
S991 CASSETTE LOCK
Q991 TAPE TOP SENSOR
D991 TAPE LED
Q992 TAPE END SENSOR
M903 LOADING MOTOR
M901 DRUM MOTOR
M902 CAPSTAN MOTOR
MD FL-MECHA

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

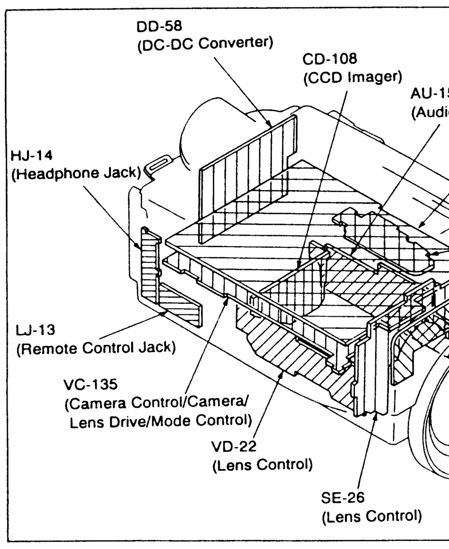
VC-135 (CAMERA CONTROL, CAMERA, LENS DRIVE, MODE CONTROL) PRINTED WIRING BOARD

— Ref. No. VC-135 BOARD: 2000 series —

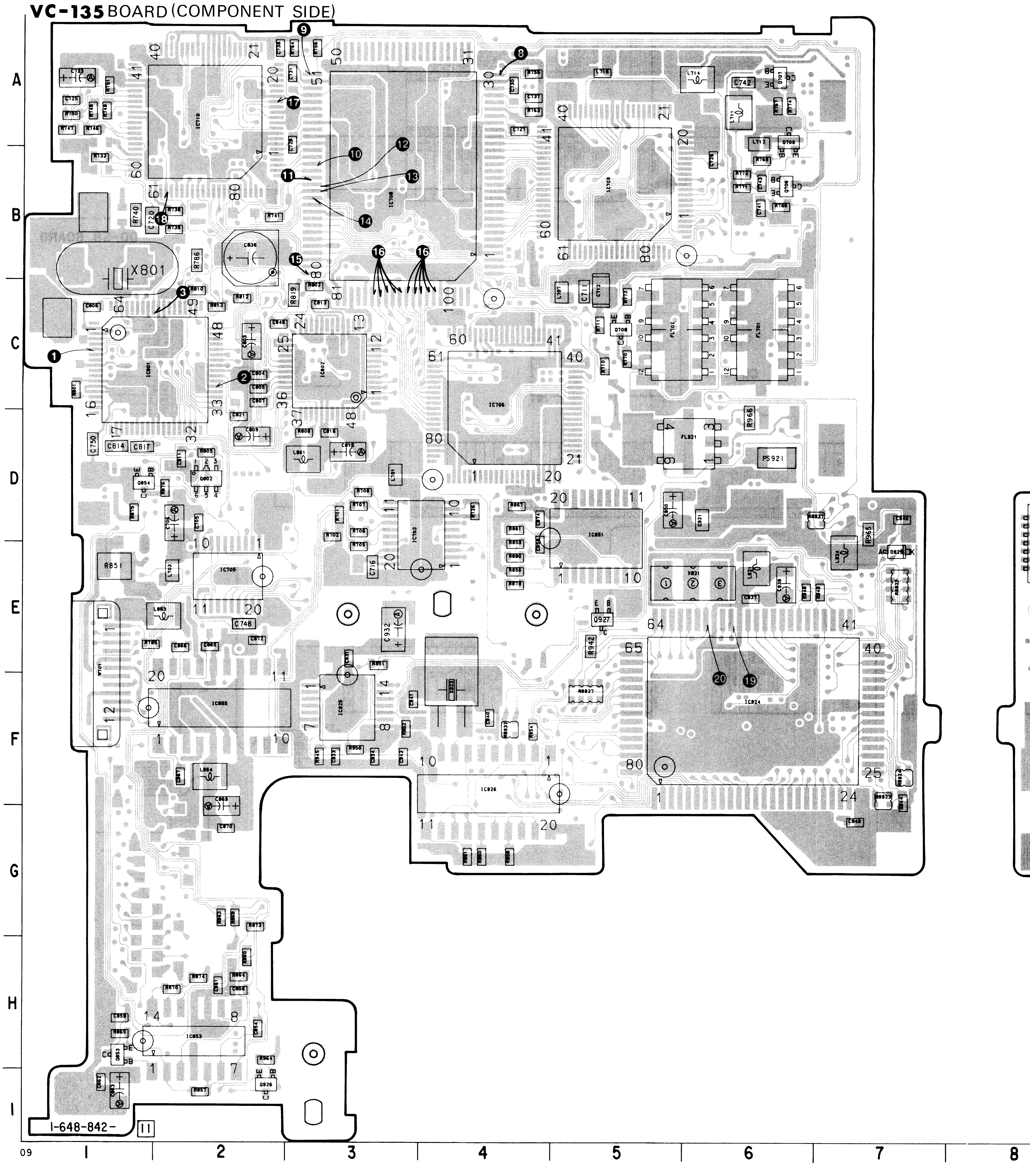
- **For printed wiring boards.**
- VC-135 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

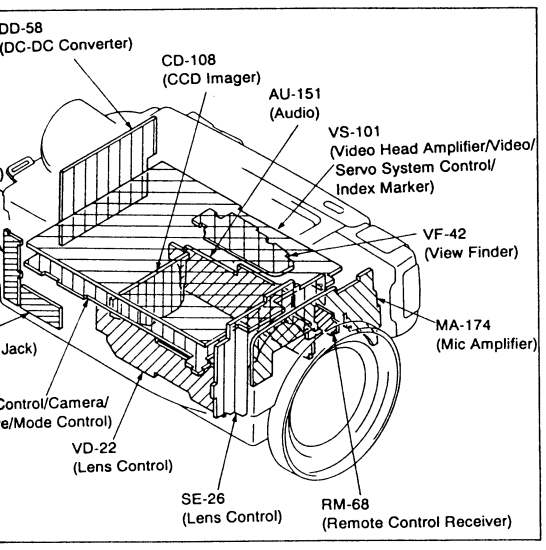
Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

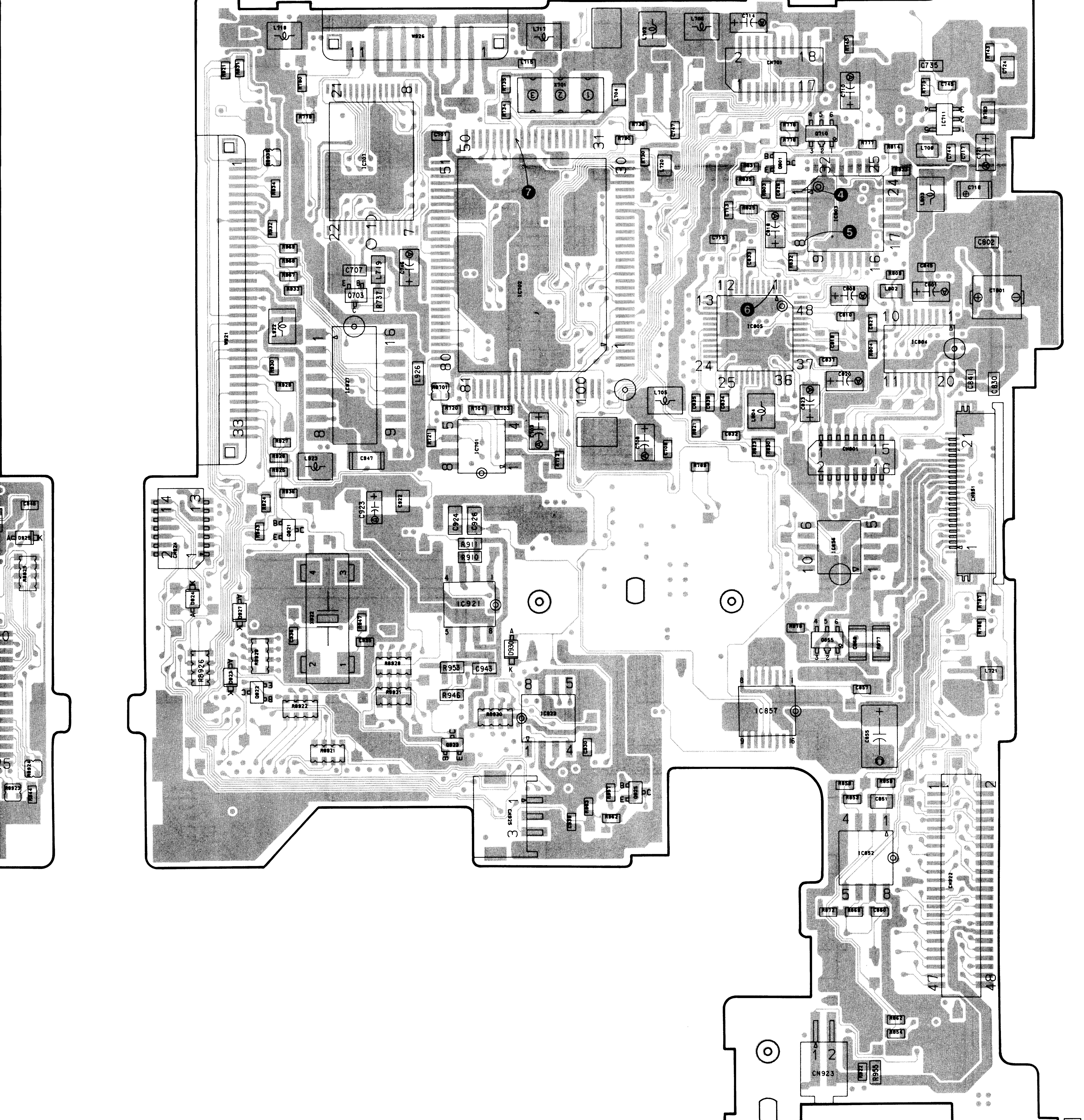

DD-58
(DC-DC Converter)
CD-108
(CCD Imager)
AU-1
(Audi
HJ-14
(Headphone Jack)
LJ-13
(Remote Control Jack)
VC-135
(Camera Control/Camera/
Lens Drive/Mode Control)
VD-22
(Lens Control)
SE-26
(Lens Control)

VC-135 BOARD (COMPONENT SIDE)


A
B
C
D
E
F
G
H
I
09
1
2
3
4
5
6
7
8
1-648-842-
11
IC710
IC708
IC709
IC601
IC602
IC706
IC703
IC705
IC851
IC855
IC925
IC926
IC924
IC853
X801
X921
FL702
FL701
FL921
PS921
Q927
Q926
Q853
Q854
Q602
Q706
Q707
Q708
Q709
C836
C932
C748
C742
C814
C817
C750
R851
R740
R786
R819
R942
R966
R965
W701


DD-58
(DC-DC Converter)
CD-108
(CCD Imager)
AU-151
(Audio)
VS-101
(Video Head Amplifier/Video/
Servo System Control/
Index Marker)
VF-42
(View Finder)
MA-174
(Mic Amplifier)
Jack)
Control/Camera/
e/Mode Control)
VD-22
(Lens Control)
SE-26
(Lens Control)
RM-68
(Remote Control Receiver)

VC-135 BOARD (CONDUCTOR SIDE)


CN701
IC701
IC702
IC703
IC804
IC805
IC803
IC827
IC856
IC921
IC922
IC857
IC852
CN801
CN851
CN922
CN923
CN921
CN925
W921
W926
X901
C735
C802
C7801
C707
Q703
L719
R737
L926
C847
C923
C924
C926
R911
R910
R953
C943
R946
D930
L721
C857
C855
1-648-842-11
7
8
9
10
11
12
13
14

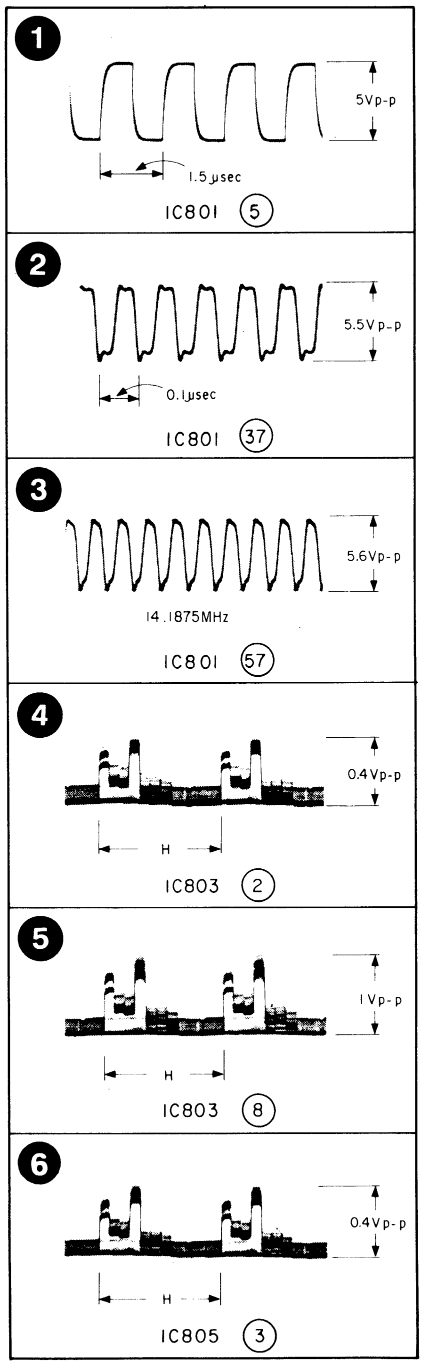
VC-135 (CAMERA CONTROL) SCHEMATIC DIAGRAM

• Refer to page 76 for Printed Wiring Board.

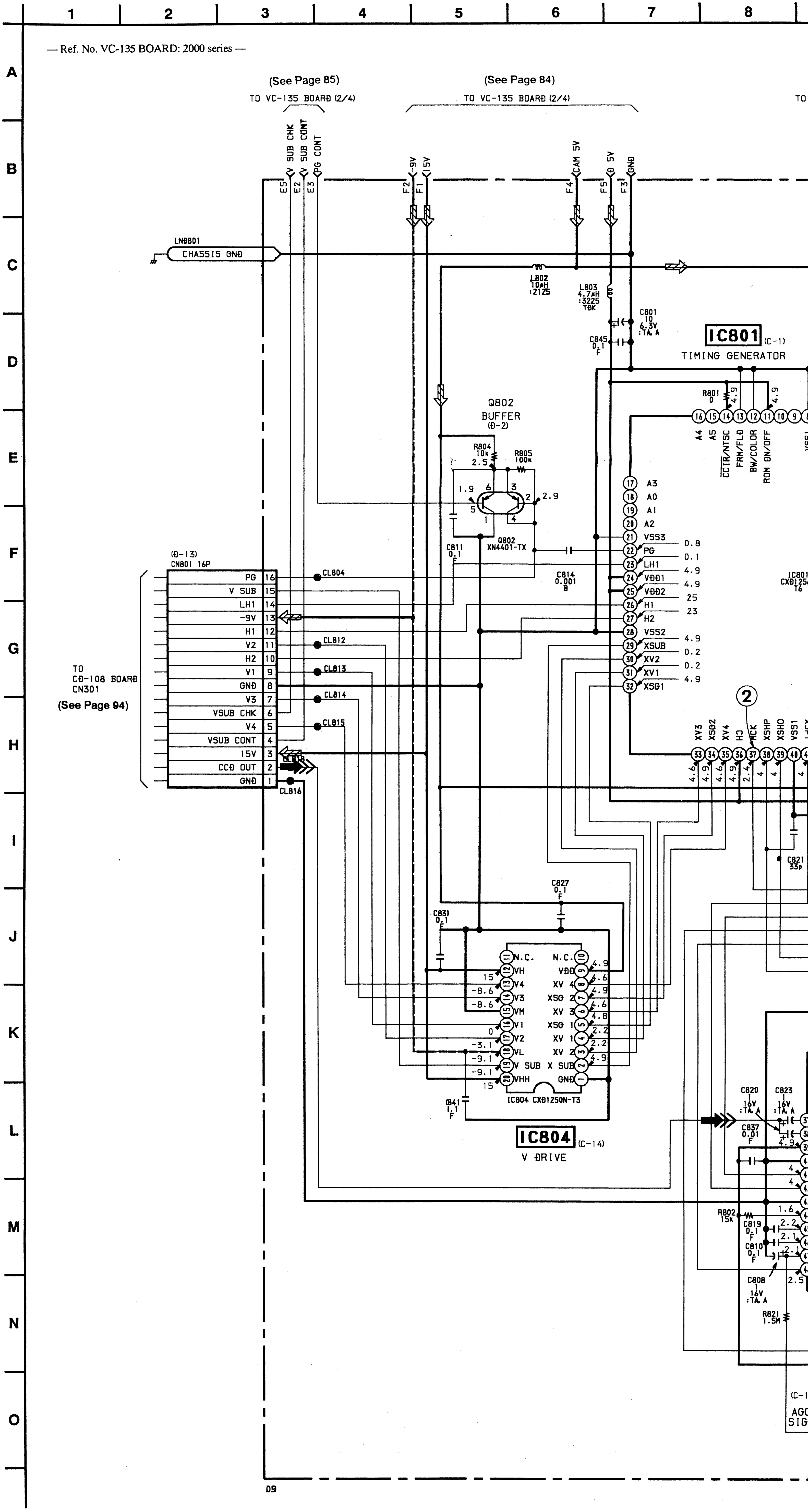
• **SIGNAL PATH**

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			➠⋙
PB			

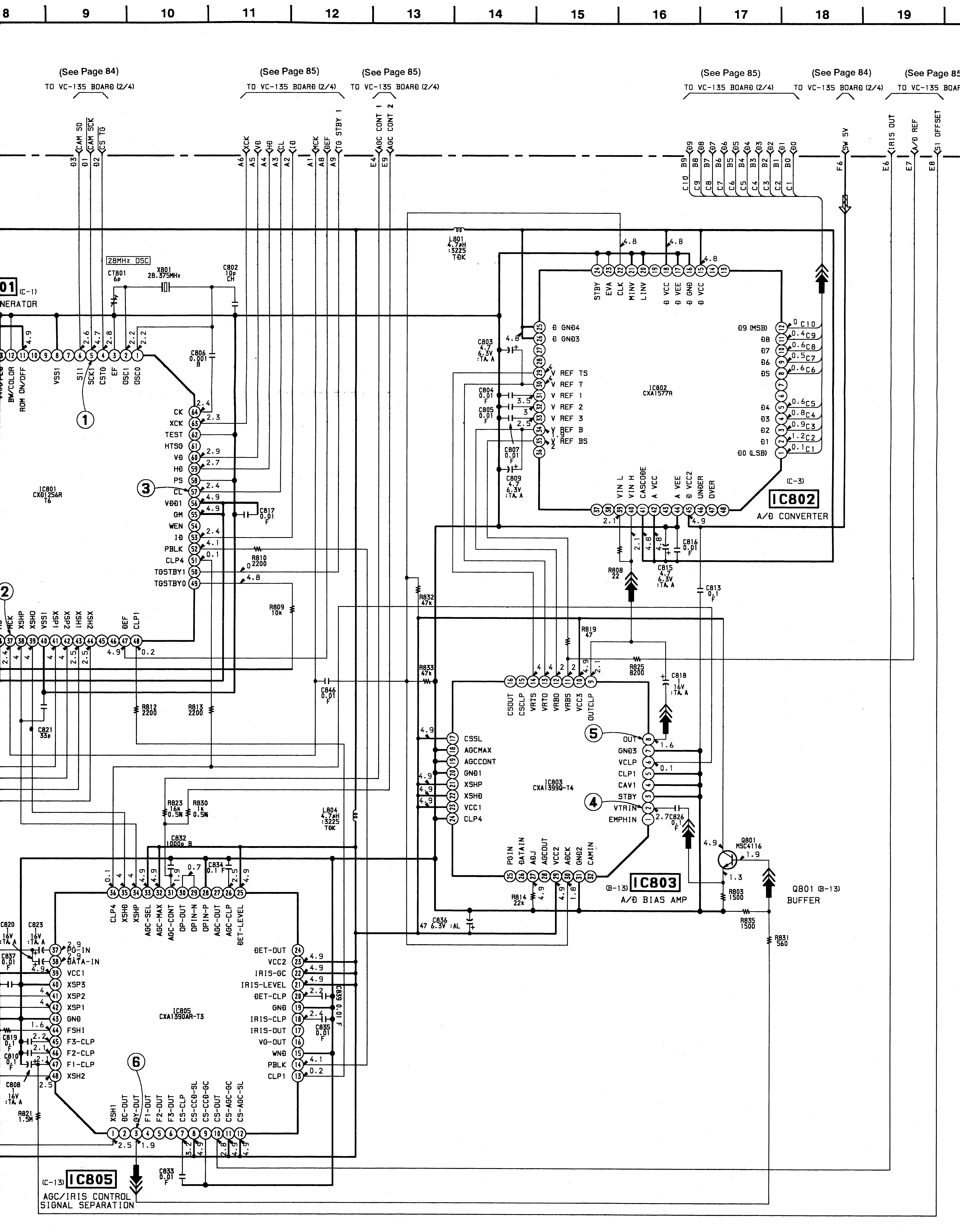
VC-135 BOARD (1/4)



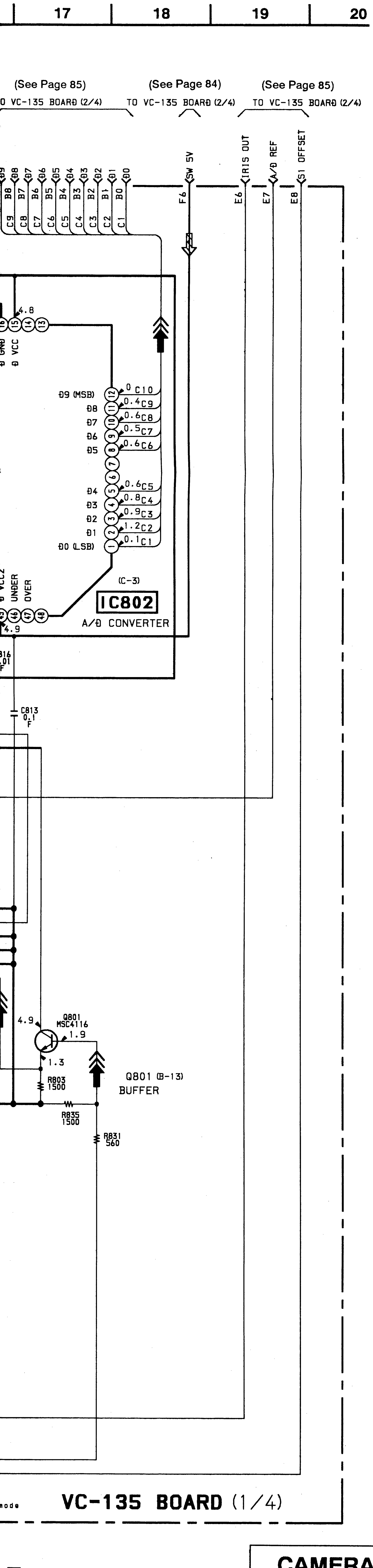
— Ref. No. VC-135 BOARD: 2000 series —



1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
(See Page 85)
TO VC-135 BOARD (2/4)
(See Page 84)
TO VC-135 BOARD (2/4)
TO
V SUB CHK
V SUB CONT
PG CONT
E5
E2
E3
-9V
15V
F2
F1
CAM 5V
F4
D 5V
F5
GND
F3
LND801
CHASSIS GND
L802
10μH
:2125
L803
4.7μH
:3225
TDK
C801
10
6.3V
:TA A
C845
0.1
F
IC801
(C-1)
TIMING GENERATOR
R801
0
4.9
4.9
A4
A5
CCIR/NTSC
FRM/FLD
BW/COLOR
ROM ON/OFF
Q802
BUFFER
(D-2)
R804
10k
2.5
R805
100k
1.9
2.9
C811
0.1
F
Q802
XN4401-TX
C814
0.001
B
A3
A0
A1
A2
VSS3
PG
LH1
VDD1
VDD2
H1
H2
VSS2
XSUB
XV2
XV1
XSG1
0.8
0.1
4.9
4.9
25
23
4.9
0.2
0.2
4.9
IC801
CXD125
T6
②
XV3
XSG2
XV4
H3
MCK
XSHP
XSHD
VSS1
4.6
4.9
4.6
4.9
2.4
4
4
4
(D-13)
CN801 16P
PG
V SUB
LH1
-9V
H1
V2
H2
V1
GND
V3
VSUB CHK
V4
VSUB CONT
15V
CCD OUT
GND
CL804
CL812
CL813
CL814
CL815
CL816
TO
CD-108 BOARD
CN301
(See Page 94)
C827
0.1
F
C830
0.1
F
N.C.
VH
V4
V3
VM
V1
V2
VL
V SUB
VHH
N.C.
VDD
XV 4
XSG 2
XV 3
XSG 1
XV 1
XV 2
X SUB
GND
15
-8.6
-8.6
0
-3.1
-9.1
-9.1
15
4.9
4.6
4.9
4.6
4.8
2.2
2.2
4.9
C841
0.1
F
IC804 CXD1250N-T3
IC804
(C-14)
V DRIVE
C821
33p
C820
1
16V
:TA A
C823
1
16V
:TA A
C837
0.01
F
4.9
4
4
R802
15k
1.6
C819
0.1
F
2.2
2.1
C810
0.1
F
2.
C808
1
16V
:TA A
2.5
R821
1.5M
(C-1
AGC
SIG
D9



8
9
10
11
12
13
14
15
16
17
18
19
(See Page 84)
TO VC-135 BOARD (2/4)
(See Page 85)
TO VC-135 BOARD (2/4)
(See Page 85)
TO VC-135 BOARD (2/4)
(See Page 85)
TO VC-135 BOARD (2/4)
(See Page 84)
TO VC-135 BOARD (2/4)
(See Page 85
TO VC-135 BOAR
CAM SO
CAM SCK
CS TG
XCK
VD
HD
CL
ID
MCK
DEF
TG STBY 1
AGC CONT 1
AGC CONT 2
SW 5V
IRIS OUT
A/D REF
S1 OFFSET
28MHz OSC
X801
28.375MHz
CT801
6p
C802
10p
CH
L801
4.7μH
:3225
TDK
IC801
CXD1256R
T6
IC802
CXA1577R
IC802
A/D CONVERTER
IC803
CXA1399Q-T4
IC803
A/D BIAS AMP
IC805
CXA1390AR-T3
IC805
AGC/IRIS CONTROL
SIGNAL SEPARATION
Q801
MSC4116
Q801 (B-13)
BUFFER
L804
4.7μH
:3225
TDK
(C-1)
NERATOR
(C-3)
(B-13)
(C-13)
①
②
③
④
⑤
⑥


17
18
19
20
(See Page 85)
(See Page 84)
(See Page 85)
TO VC-135 BOARD (2/4)
TO VC-135 BOARD (2/4)
TO VC-135 BOARD (2/4)
SW 5V
IRIS OUT
A/D REF
S1 OFFSET
F6
E6
E7
E8
B8 B7 B6 B5 B4 B3 B2 B1 B0
C9 C8 C7 C6 C5 C4 C3 C2 C1
D8 D7 D6 D5 D4 D3 D2 D1 D0
4.8
D VCC
D9 (MSB)
D8
D7
D6
D5
D4
D3
D2
D1
D0 (LSB)
0 C10
0.4 C9
0.6 C8
0.5 C7
0.6 C6
0.6 C5
0.8 C4
0.9 C3
1.2 C2
0.1 C1
UNDER
OVER
4.9
(C-3)
IC802
A/D CONVERTER
C813
0.1
F
4.9
Q801
MSC4116
1.9
1.3
R803
1500
R835
1500
R831
560
Q801 (B-13)
BUFFER

VC-135 BOARD (1/4)

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

(In addition to this , the necessary note is printed in each block.)

- **For printed wiring boards.**
- ▨ : Pattern from the side which enables seeing. (The other layers'patterns are not indicated.)
- Circled numbers refer to waveforms.
- (B) or (F), etc. of capacitors indicate the temperature characteristics.
- Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

- **For schematic diagrams.**
- Caution when replacing chip parts. New parts must be attached after removal of chip. Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms. Chip resistor are 1/10W unless otherwise noted. kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF. 50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊡ : nonflammable resistor.
- ∿ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repeair.
- —— : B+ Line.
- - - - : B– Line.
- ⇨ : IN/OUT direction of (+, –) B LINE.
- Circled numbers refer to waveforms.

Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

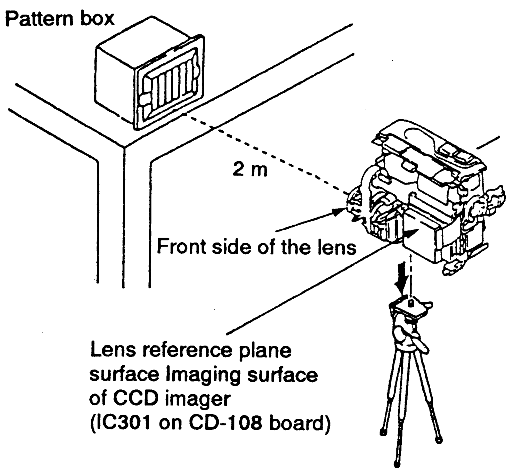
When indicating parts by reference number, please include the board name.

- **Measuring conditions voltage value and waveform.**

(CAMERA REC mode)

- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10MΩ).
- Voltage variations may be noted due to normal production tolerances.

1. Connection


Pattern box
2 m
Front side of the lens
Lens reference plane surface Imaging surface of CCD imager (IC301 on CD-108 board)

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

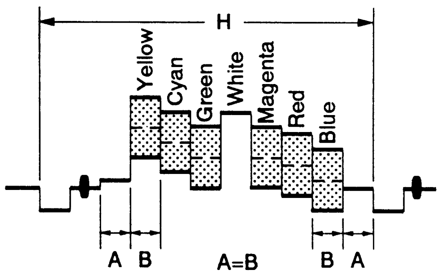

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A

Fig. a (Video output terminal output waveform)

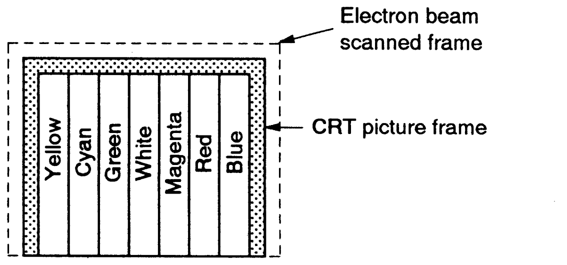

Electron beam scanned frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. b (Picture on monitor TV)

(VTR REC, VTR PB MODE)

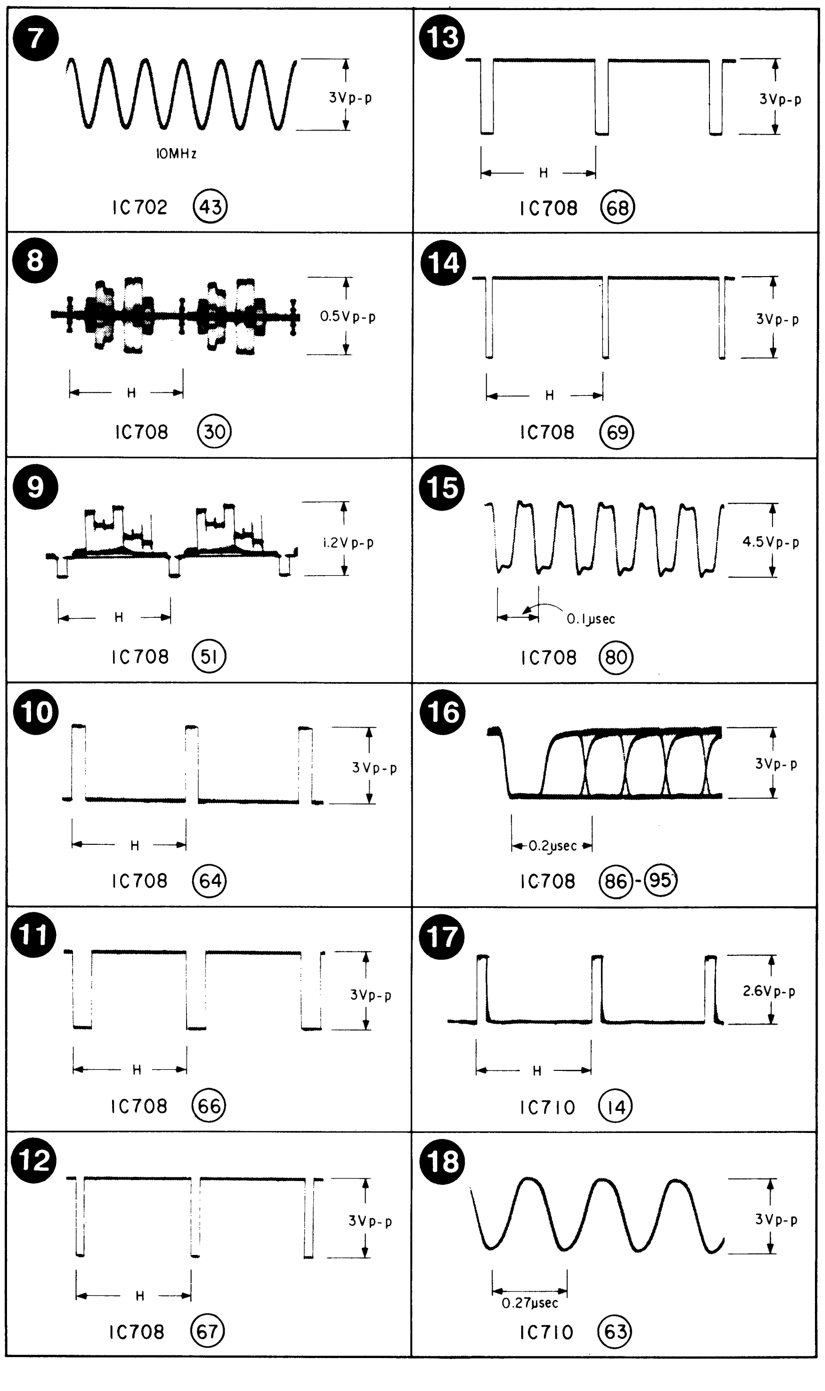
- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

Note: Refer to "10-1-5. How to set the REC mode in the model with out REC switch." in VIDEO SECTION ADJUSTMENTS.

- **SIGNAL PATH**

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡»	➡»»
PB			

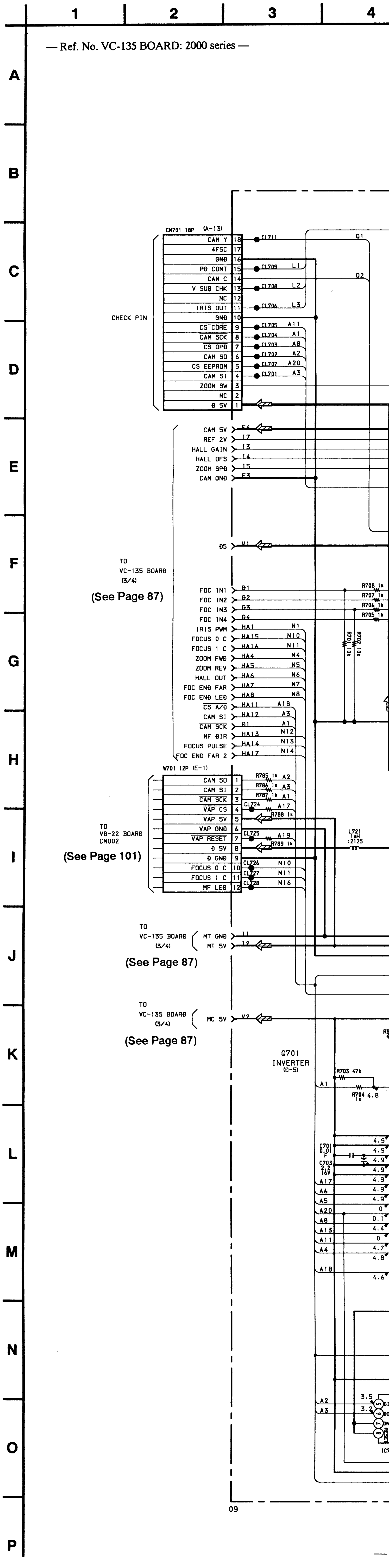
VC-135 BOARD (2/4)



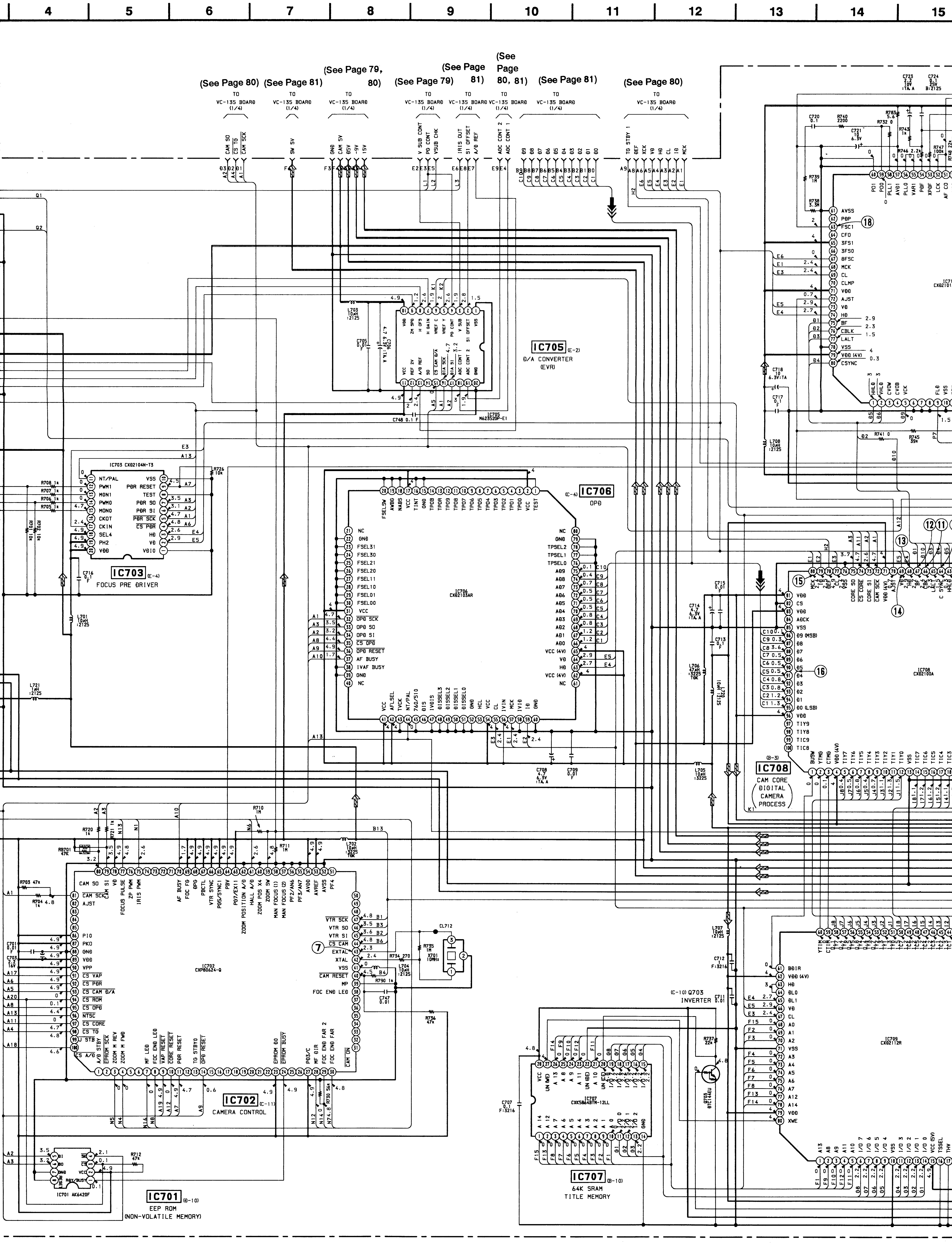
VC-135 (CAMERA) SCHEMATIC DIAGRAM

• Refer

— Ref. No. VC-135 BOARD: 2000 series —


1
2
3
4
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
CN701 18P (A-13)
CAM Y 18
4FSC 17
GND 16
PG CONT 15
CAM C 14
V SUB CHK 13
NC 12
IRIS OUT 11
GND 10
CS CORE 9
CAM SCK 8
CS OPD 7
CAM SO 6
CS EEPROM 5
CAM SI 4
ZOOM SW 3
NC 2
D 5V 1
CHECK PIN
CL711
CL709 L1
CL708 L2
CL706 L3
CL705 A11
CL704 A1
CL703 A8
CL702 A2
CL707 A20
CL701 A3
Q1
Q2
CAM 5V F4
REF 2V I7
HALL GAIN I3
HALL OFS I4
ZOOM SPD I5
CAM GND F3
D5 V1
TO
VC-135 BOARD
(3/4)
(See Page 87)
FOC IN1 G1
FOC IN2 G2
FOC IN3 G3
FOC IN4 G4
IRIS PWM HA1 N1
FOCUS 0 C HA15 N10
FOCUS 1 C HA16 N11
ZOOM FWD HA4 N4
ZOOM REV HA5 N5
HALL OUT HA6 N6
FOC END FAR HA7 N7
FOC END LED HA8 N8
CS A/D HA11 A18
CAM SI HA12 A3
CAM SCK D1 A1
MF DIR HA13 N12
FOCUS PULSE HA14 N13
FOC END FAR 2 HA17 N14
R708 1k
R707 1k
R706 1k
R705 1k
R701 10k
R702 10k
W701 12P (E-1)
CAM SO 1
CAM SI 2
CAM SCK 3
VAP CS 4
VAP 5V 5
VAP GND 6
VAP RESET 7
D 5V 8
D GND 9
FOCUS 0 C 10
FOCUS 1 C 11
MF LED 12
R785 1k A2
R786 1k A3
R787 1k A1
CL724 A17
R788 1k
CL725 A19
R789 1k
CL726 N10
CL727 N11
CL728 N16
TO
VD-22 BOARD
CN002
(See Page 101)
L721
1μH
:2125
TO
VC-135 BOARD
(3/4)
MT GND I1
MT 5V I2
(See Page 87)
TO
VC-135 BOARD
(3/4)
MC 5V V2
(See Page 87)
Q701
INVERTER
(D-5)
R703 47k
A1
R704 1k
4.8
C701 0.01 F
C703 2.2 16V
4.9
4.9
4.9
4.9
4.9
4.9
4.9
0
0.1
4.4
0
4.7
4.8
4.6
A17
A6
A5
A20
A8
A13
A11
A4
A18
A2
A3
3.5
3.2
09

• Refer to page 76 for Printed Wiring Board.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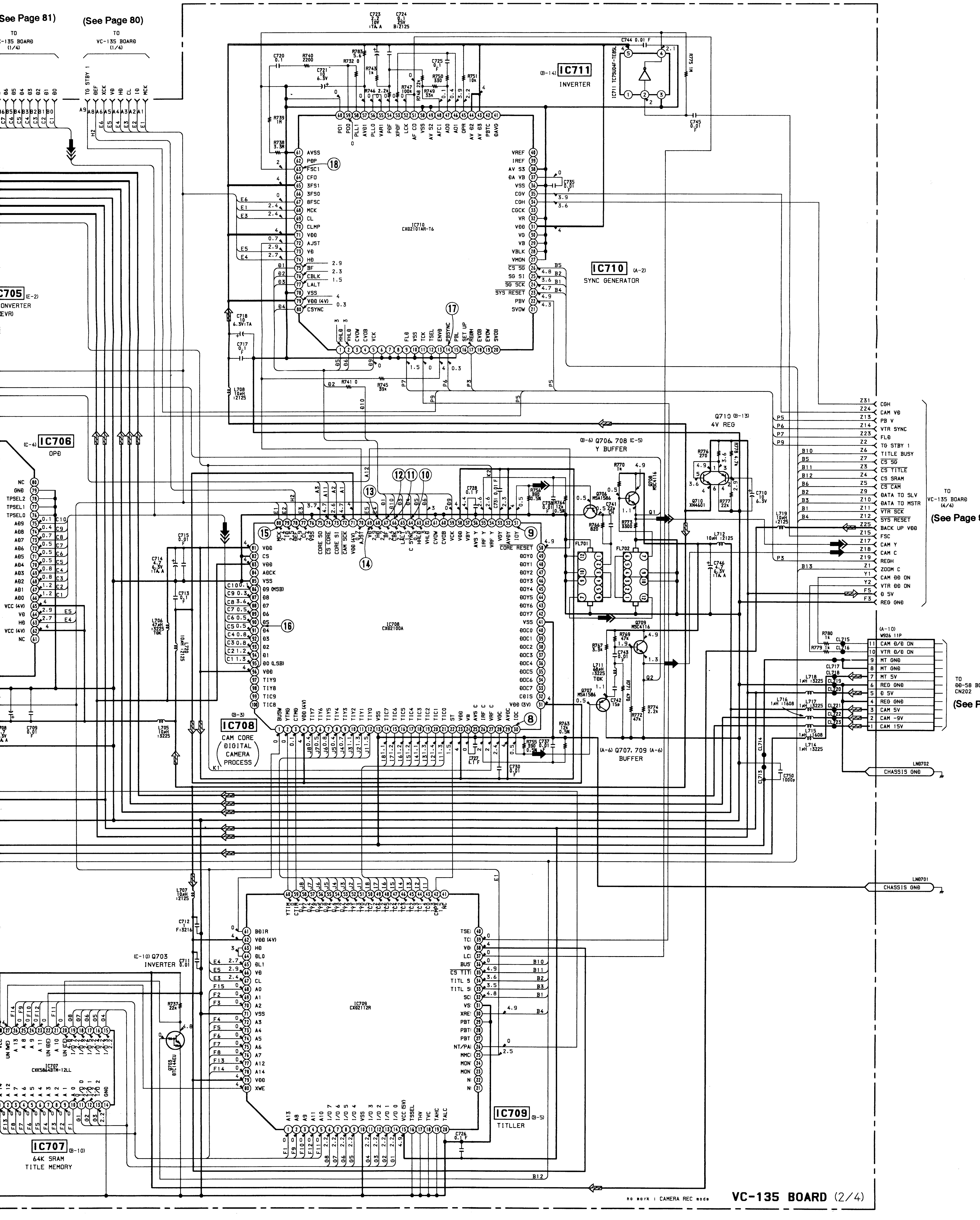
14
15
(See Page 80)
(See Page 81)
(See Page 79, 80)
(See Page 79)
(See Page 81)
(See Page 80, 81)
(See Page 81)
(See Page 80)
TO VC-135 BOARD (1/4)
CAM SO
CS TG
CAM SCK
SW 5V
GND
CAM 5V
D5V
-9V
15V
V SUB CONT
PG CONT
VSUB CHK
IRIS OUT
S1 OFFSET
A/D REF
ADC CONT 2
ADC CONT 1
TG STBY 1
IC705
D/A CONVERTER (EVR)
M62352GP-E1
IC706
OPD
CXD2103AR
IC703
FOCUS PRE DRIVER
IC703 CXD2104N-T3
IC702
CAMERA CONTROL
CXP80624-Q
IC701
EEP ROM (NON-VOLATILE MEMORY)
IC701 AK6420F
IC707
64K SRAM TITLE MEMORY
CXK5864BTM-12LL
IC708
CAM CORE DIGITAL CAMERA PROCESS
CXD2100A
IC709
CXD2112R
Q703
INVERTER
X701 10MHz
CL712
⑦
⑬
⑭
⑮
⑯
⑱

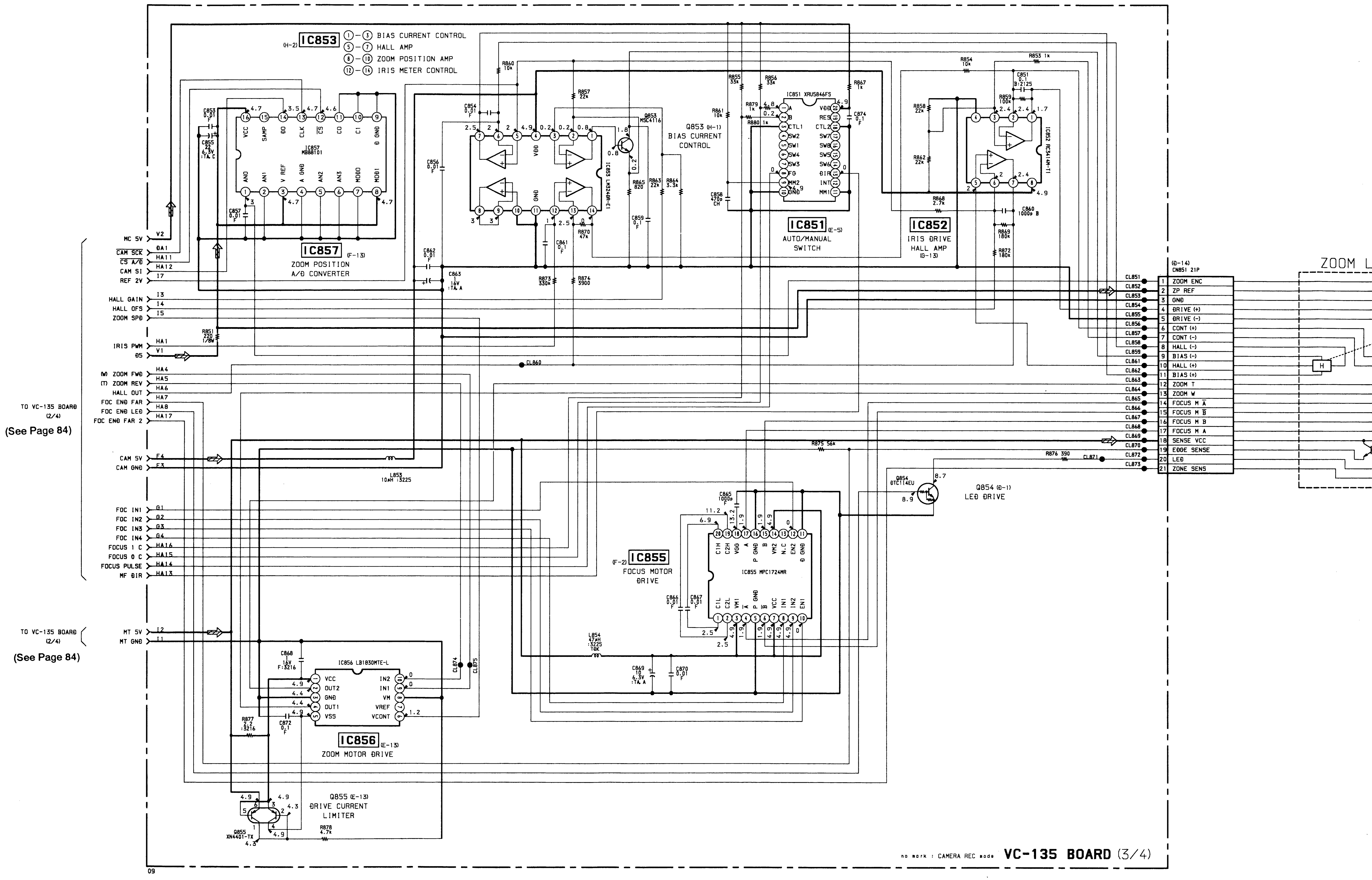

(See Page 81)
TO VC-135 BOARD (1/4)
(See Page 80)
TO VC-135 BOARD (1/4)
TG STBY 1
DEF
XCK
VD
HD
CL
ID
MCK
IC711 TC7SU04F-TE85L
(B-14) IC711
INVERTER
IC710 CXD2101AR-T6
IC710 (A-2)
SYNC GENERATOR
IC705 (E-2)
CONVERTER
(EVR)
(C-4) IC706
OPD
IC708 CXD2100A
(B-3) IC708
CAM CORE
DIGITAL
CAMERA
PROCESS
IC709 CXD2112R
IC709 (B-5)
TITLLER
IC707 CXK5864BTM-12LL
IC707 (B-10)
64K SRAM
TITLE MEMORY
(C-10) Q703
INVERTER
Q703 DTC144EU
Q710 (B-13)
4V REG
Q710 XN4601
(B-6) Q706, 708 (C-5)
Y BUFFER
Q706 MSA1586
Q708 MSC4116
Q707 MSA1586
Q709 MSC4116
(A-6) Q707, 709 (A-6)
BUFFER
FL701
FL702
Z31 CGH
Z24 CAM VD
Z13 PB V
Z14 VTR SYNC
Z23 FLD
Z2 TG STBY 1
Z6 TITLE BUSY
Z7 CS SG
Z3 CS TITLE
Z4 CS SRAM
Z5 CS CAM
Z9 DATA TO SLV
Z10 DATA TO MSTR
Z11 VTR SCK
Z12 SYS RESET
Z25 BACK UP VDD
Z15 FSC
Z17 CAM Y
Z18 CAM C
Z19 REGH
Z1 ZOOM C
Y1 CAM DD ON
Y2 VTR DD ON
F5 D 5V
F3 REG GND
TO VC-135 BOARD (4/4)
(See Page
(A-10) W926 11P
11 CAM D/D ON
10 VTR D/D ON
9 MT GND
8 MT GND
7 MT 5V
6 REG GND
5 D 5V
4 REG GND
3 CAM 5V
2 CAM -9V
1 CAM 15V
TO DD-58 BO
CN202
(See P
LND702
CHASSIS GND
LND701
CHASSIS GND

no mark : CAMERA REC mode

VC-135 BOARD (2/4)

• Refer to page 76 for Printed Wiring Board.

— Ref. No. VC-135 BOARD: 2000 series —


1
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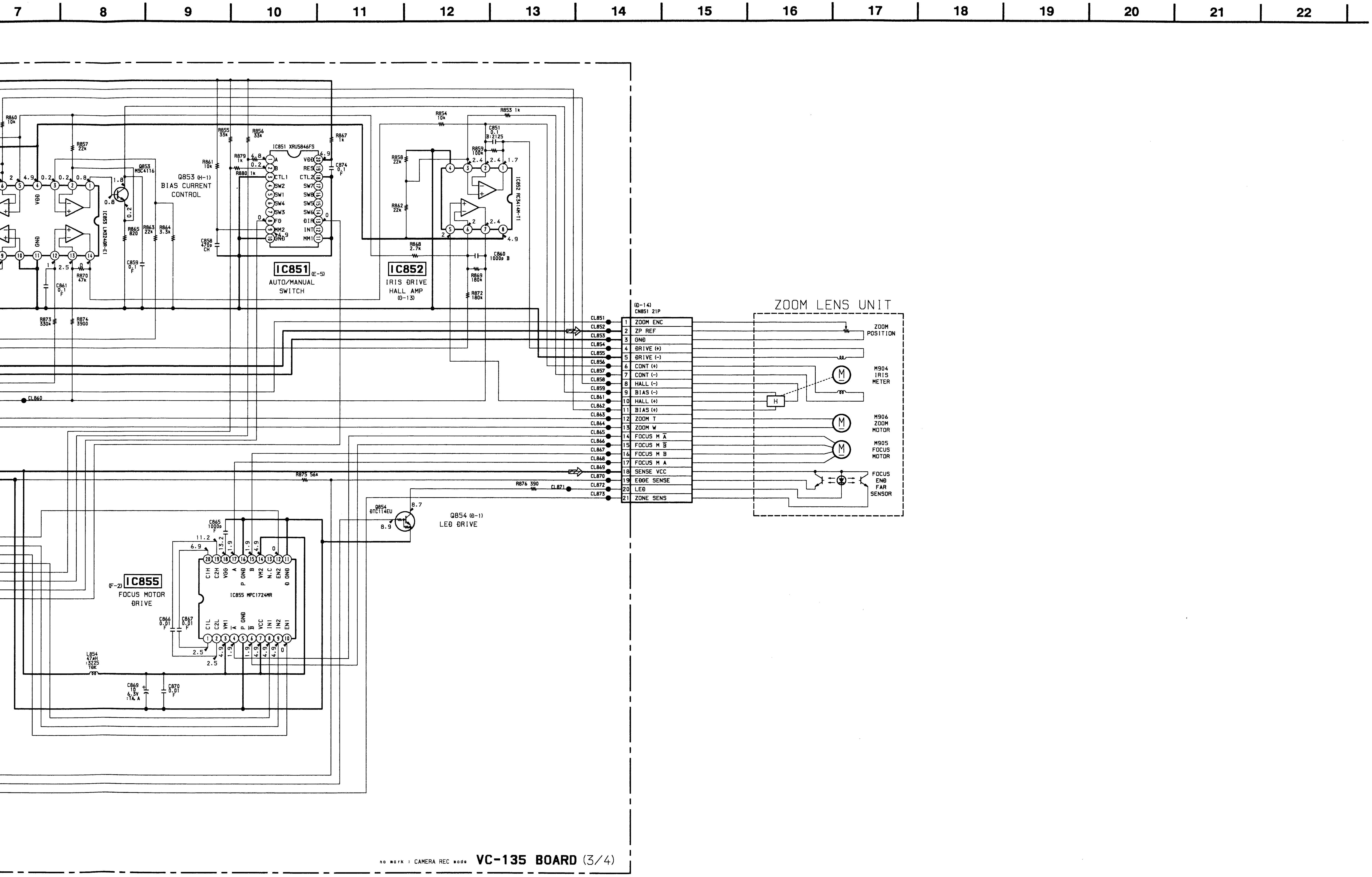
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
IC853 (H-2)
①-③ BIAS CURRENT CONTROL
⑤-⑦ HALL AMP
⑧-⑩ ZOOM POSITION AMP
⑫-⑭ IRIS METER CONTROL
IC857 MB88101
IC857 (F-13)
ZOOM POSITION A/D CONVERTER
IC853 LM324BR-E1
Q853 MSC4116
Q853 (H-1) BIAS CURRENT CONTROL
IC851 XRU5846FS
IC851 (E-5) AUTO/MANUAL SWITCH
IC852 RC3414M-T1
IC852 IRIS DRIVE HALL AMP (G-13)
(G-14) CN851 21P
ZOOM ENC
ZP REF
GND
DRIVE (+)
DRIVE (-)
CONT (+)
CONT (-)
HALL (-)
BIAS (-)
HALL (+)
BIAS (+)
ZOOM T
ZOOM W
FOCUS M A
FOCUS M B
FOCUS M B
FOCUS M A
SENSE VCC
EDGE SENSE
LED
ZONE SENS
ZOOM L
Q854 DTC114EU
Q854 (G-1) LED DRIVE
IC855 MPC1724MR
IC855 (F-2) FOCUS MOTOR DRIVE
IC856 LB1830MTE-L
IC856 (E-13) ZOOM MOTOR DRIVE
Q855 XN4401-TX
Q855 (E-13) DRIVE CURRENT LIMITER
MC 5V
CAM SCK
CS A/D
CAM SI
REF 2V
HALL GAIN
HALL OFS
ZOOM SPD
IRIS PWM
DS
(W) ZOOM FWD
(T) ZOOM REV
HALL OUT
FOC END FAR
FOC END LED
FOC END FAR 2
CAM 5V
CAM GND
FOC IN1
FOC IN2
FOC IN3
FOC IN4
FOCUS 1 C
FOCUS 0 C
FOCUS PULSE
MF DIR
MT 5V
MT GND
TO VC-135 BOARD (2/4)
(See Page 84)
TO VC-135 BOARD (2/4)
(See Page 84)
no mark : CAMERA REC mode
VC-135 BOARD (3/4)


7
8
9
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14
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16
17
18
19
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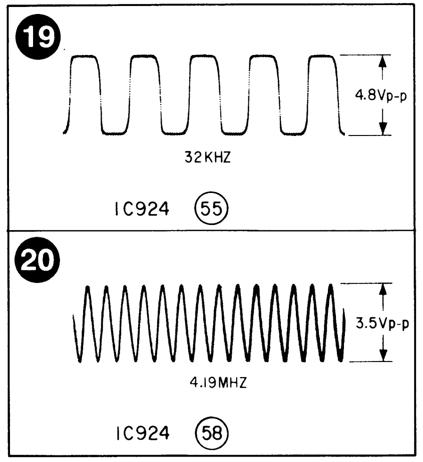
21
22
IC851 XRU5846FS
IC851 (E-5)
AUTO/MANUAL SWITCH
IC852 RC3414M-T1
IC852
IRIS DRIVE HALL AMP (G-13)
IC853 LM324DR-E1
Q853 MSC4116
Q853 (H-1)
BIAS CURRENT CONTROL
Q854 DTC114EU
Q854 (B-1)
LED DRIVE
IC855 MPC1724MR
(F-2) IC855
FOCUS MOTOR DRIVE
VDD
GND
A
B
CTL1
SW2
SW1
SW3
SW4
FG
MM2
RES
CTL2
SW7
SW8
SW5
SW6
DIR
INT
MM1
C1H
C2H
VGG
P GND
VM2
N.C
EN2
D GND
C1L
C2L
VM1
VCC
IN1
IN2
EN1
R860 10k
R857 22k
R855 33k
R856 33k
R861 10k
R879 1k
R880 1k
R867 1k
C874 0.1 F
C858 470p CH
R865 820
R863 22k
R864 3.3k
C859 0.1 F
C861 0.1 F
R870 47k
R873 330k
R874 3900
R854 10k
R853 1k
C851 0.1 B:2125
R859 100k
R858 22k
R862 22k
R868 2.7k
C860 1000p B
R869 180k
R872 180k
R875 56k
R876 390
CL871
CL860
C865 1000p F
C866 0.01 F
C867 0.01 F
L854 47µH :3225 TOK
C869 10 6.3V :TA A
C870 0.01 F
(G-14) CN851 21P
CL851
CL852
CL853
CL854
CL855
CL856
CL857
CL858
CL859
CL861
CL862
CL863
CL864
CL865
CL866
CL867
CL868
CL869
CL870
CL872
CL873
1 ZOOM ENC
2 ZP REF
3 GND
4 DRIVE (+)
5 DRIVE (-)
6 CONT (+)
7 CONT (-)
8 HALL (-)
9 BIAS (-)
10 HALL (+)
11 BIAS (+)
12 ZOOM T
13 ZOOM W
14 FOCUS M A
15 FOCUS M B
16 FOCUS M B
17 FOCUS M A
18 SENSE VCC
19 EDGE SENSE
20 LED
21 ZONE SENS
ZOOM LENS UNIT
ZOOM POSITION
M904 IRIS METER
H
M906 ZOOM MOTOR
M905 FOCUS MOTOR
FOCUS END FAR SENSOR
M
no mark : CAMERA REC mode
VC-135 BOARD (3/4)

VC-135 (MODE CONTROL) SCHEMATIC DIAGRAM

- Refer to page 76 for Printed Wiring Board.

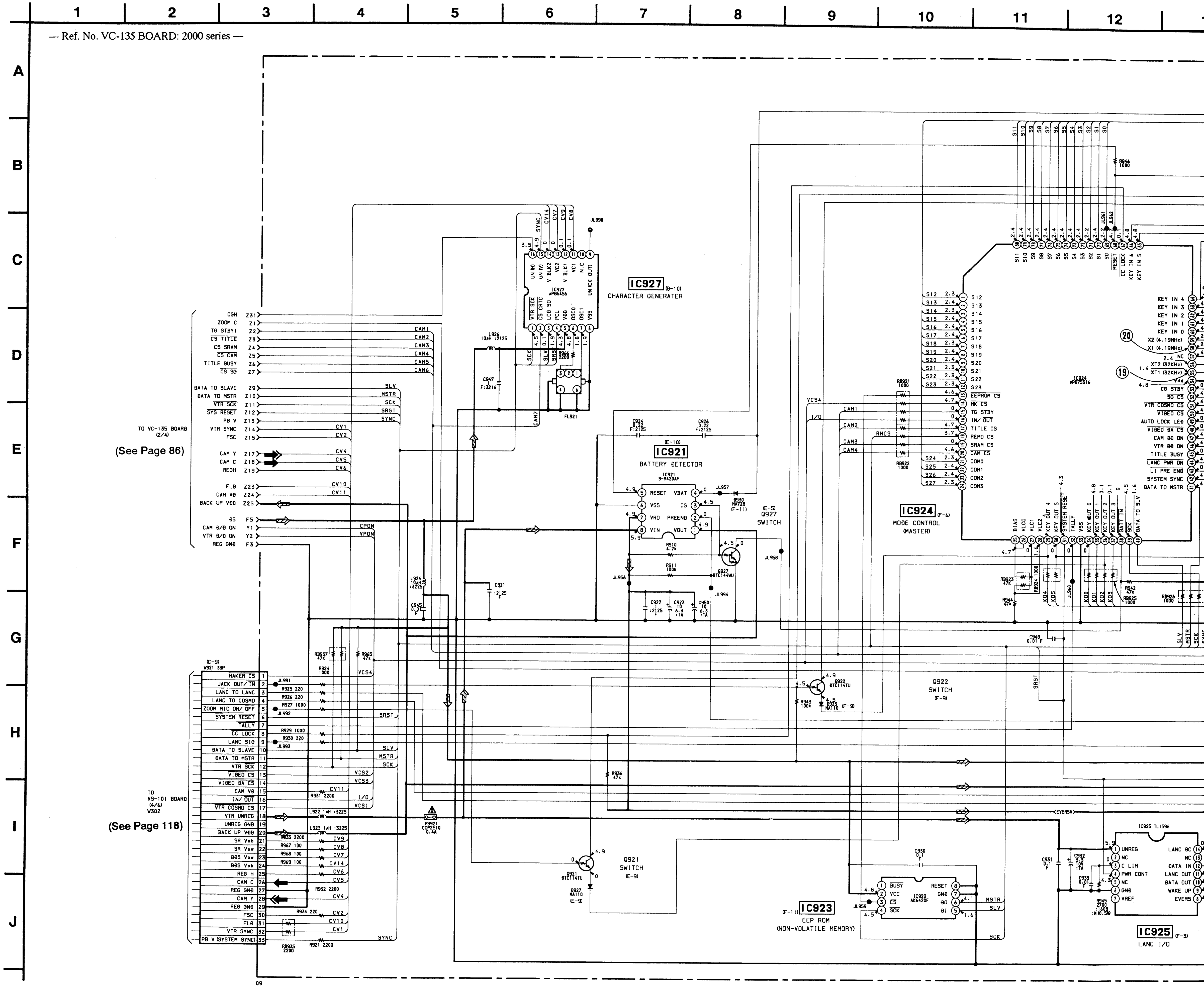
VC-135 BOARD (4/4)



- **SIGNAL PATH**

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	⇛	
PB			

Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.


1
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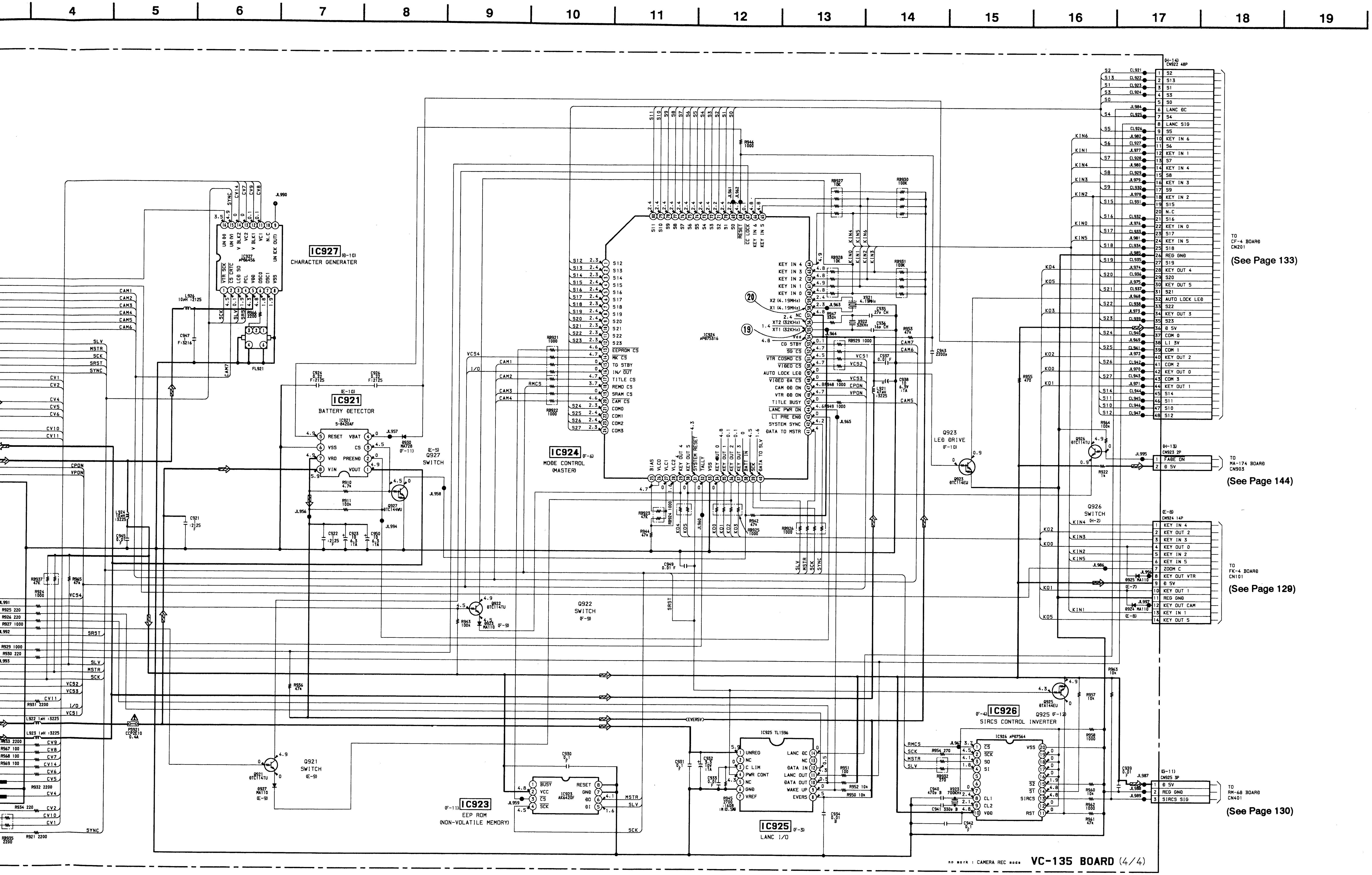
11
12
A
B
C
D
E
F
G
H
I
J
— Ref. No. VC-135 BOARD: 2000 series —
TO VC-135 BOARD (2/4)
(See Page 86)
TO VS-101 BOARD (4/6) W302
(See Page 118)
IC927 CHARACTER GENERATER
IC921 BATTERY DETECTOR
Q927 SWITCH
IC924 MODE CONTROL (MASTER)
Q922 SWITCH
Q921 SWITCH
IC923 EEP ROM (NON-VOLATILE MEMORY)
IC925 LANC I/O
CSH
ZOOM C
TG STBY1
CS TITLE
CS SRAM
CS CAM
TITLE BUSY
CS SG
DATA TO SLAVE
DATA TO MSTR
VTR SCK
SYS RESET
PB V
VTR SYNC
FSC
CAM Y
CAM C
REGH
FLD
CAM VD
BACK UP VDD
DS
CAM D/D ON
VTR D/D ON
REG GND
MAKER CS
JACK OUT/IN
LANC TO LANC
LANC TO COSMO
ZOOM MIC ON/OFF
SYSTEM RESET
TALLY
CC LOCK
LANC SIO
VTR SCK
VIDEO CS
VIDEO DA CS
CAM VD
IN/OUT
VTR COSMO CS
VTR UNREG
UNREG GND
BACK UP VDD
SR Vob
SR Vow
DDS Vow
DDS Vob
REG H
CAM C
REG GND
CAM Y
REG GND
FSC
FLD
VTR SYNC
PB V (SYSTEM SYNC)
(EVERSY)
09


4
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6
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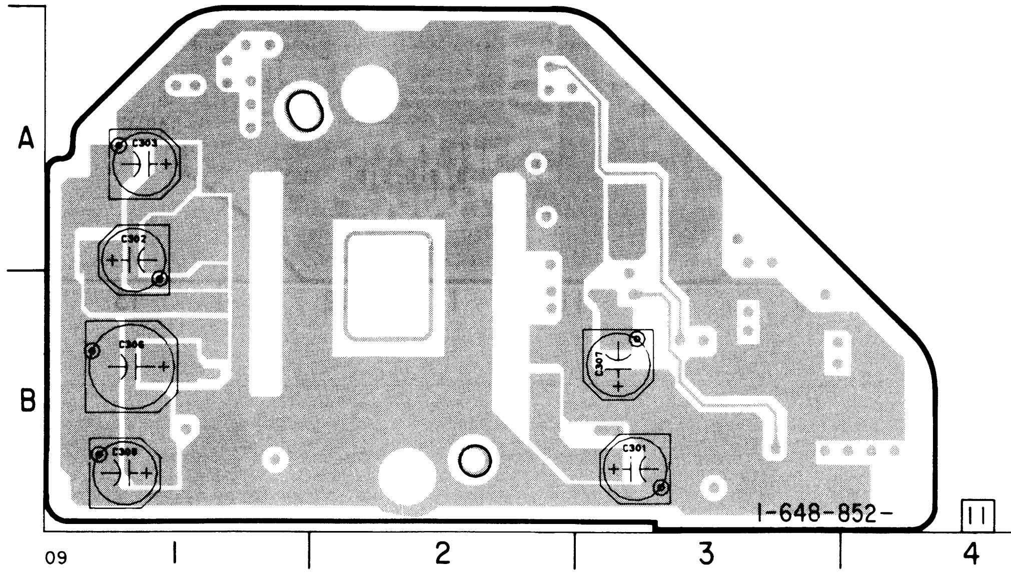
8
9
10
11
12
13
14
15
16
17
18
19
IC927 (E-10)
CHARACTER GENERATER
IC921 (E-10)
BATTERY DETECTOR
(E-5)
Q927
SWITCH
IC924 (F-6)
MODE CONTROL
(MASTER)
Q922
SWITCH
(F-9)
Q921
SWITCH
(E-9)
(F-11) IC923
EEP ROM
(NON-VOLATILE MEMORY)
IC925 (F-3)
LANC I/O
(F-4) IC926
SIRCS CONTROL INVERTER
Q925 (F-12)
Q923
LED DRIVE
(F-10)
Q926
SWITCH
TO
CF-4 BOARD
CN201
(See Page 133)
TO
MA-174 BOARD
CN903
(See Page 144)
TO
FK-4 BOARD
CN101
(See Page 129)
TO
RM-68 BOARD
CN401
(See Page 130)
no mark : CAMERA REC mode
VC-135 BOARD (4/4)

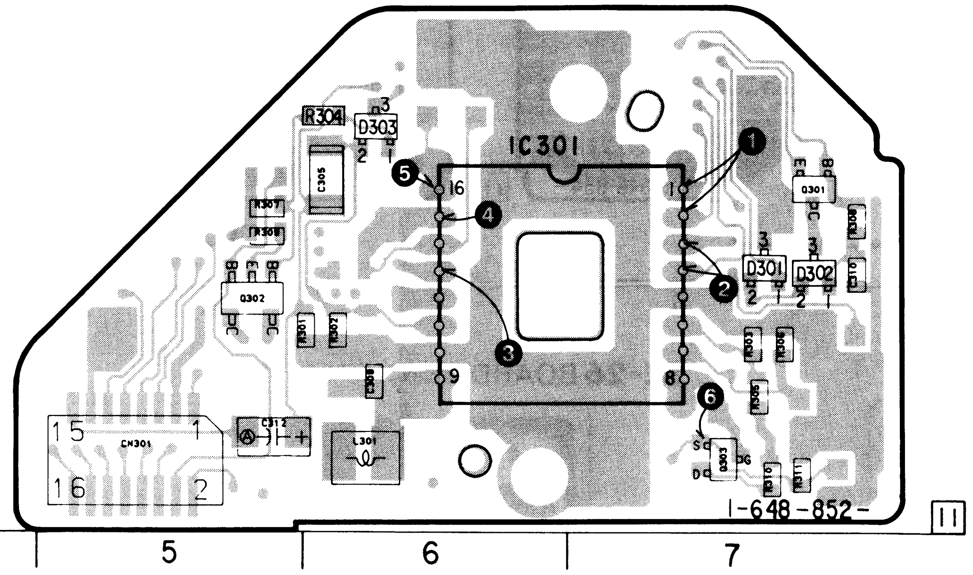
CD-108 (CCD IMAGER) PRINTED WIRING BOARD

— Ref. No. CD-108 BOARD: 1000 series —

CD-108 BOARD (COMPONENT SIDE)

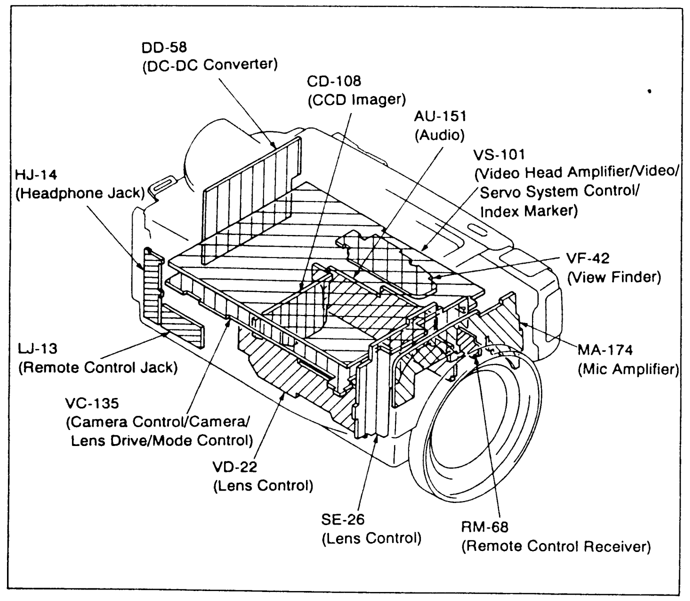

A
B
C303
C302
C304
C306
C307
C301
1-648-852-
11
09
1
2
3
4

CD-108 BOARD (CONDUCTOR SIDE)

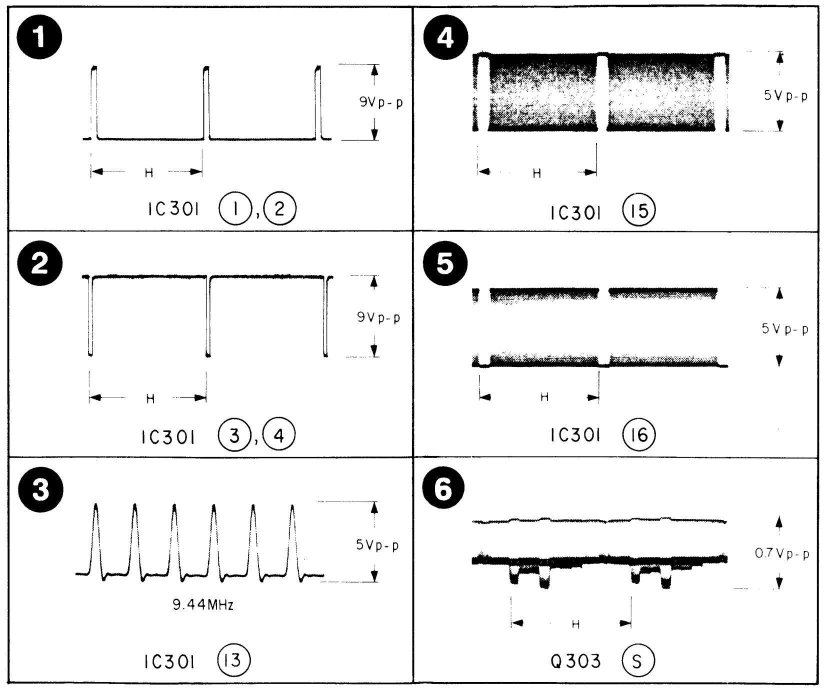

R304
D303
IC301
❺
❹
16
❶
❷
❸
9
8
❻
Q301
D301
D302
Q302
C305
R307
R308
CN301
15
16
1
2
C312
L301
Q303
1-648-852-
11
5
6
7

- **For printed wiring boards.**
- CD-108 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

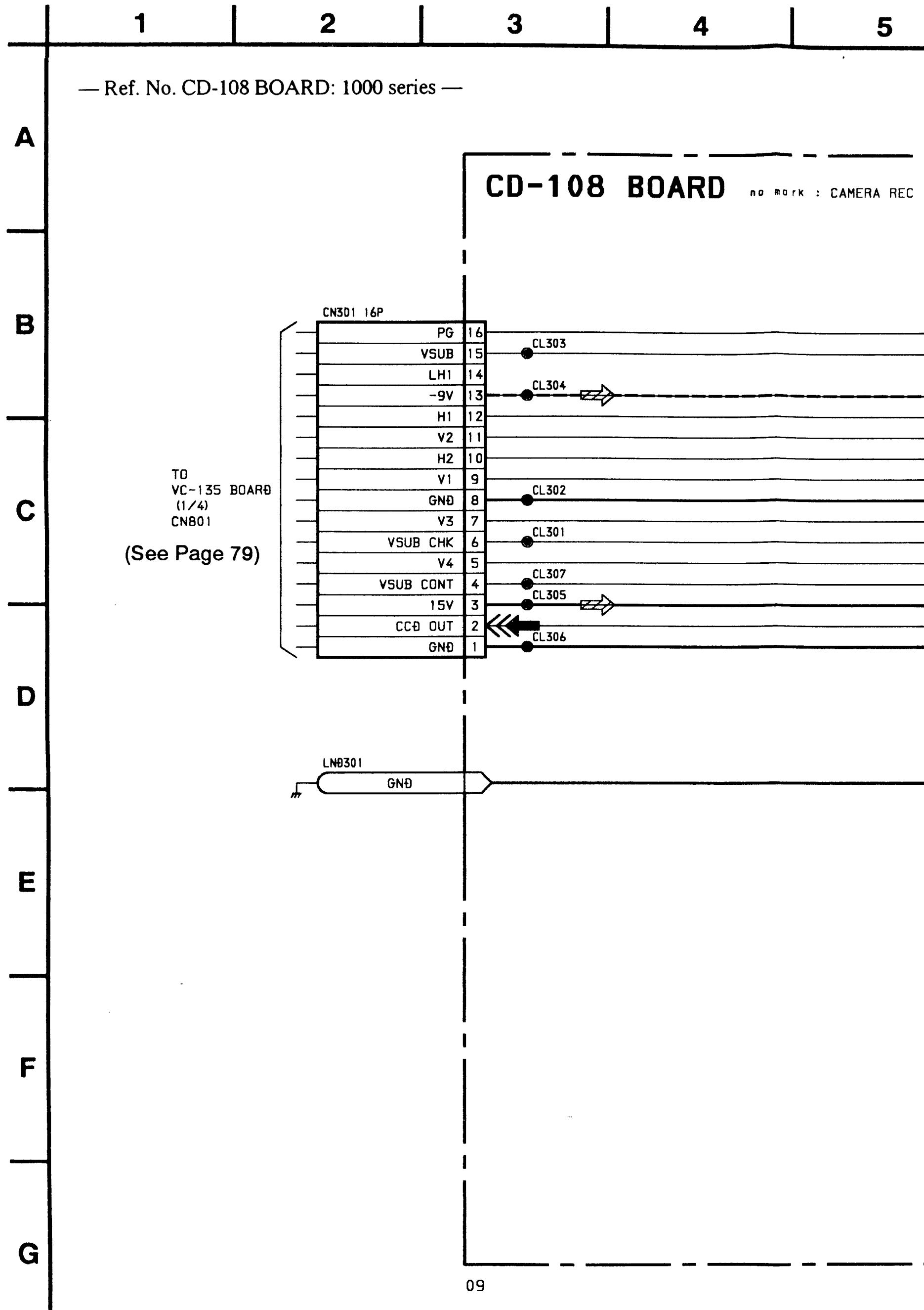

DD-58
(DC-DC Converter)
CD-108
(CCD Imager)
AU-151
(Audio)
VS-101
(Video Head Amplifier/Video/Servo System Control/Index Marker)
HJ-14
(Headphone Jack)
VF-42
(View Finder)
LJ-13
(Remote Control Jack)
MA-174
(Mic Amplifier)
VC-135
(Camera Control/Camera/Lens Drive/Mode Control)
VD-22
(Lens Control)
SE-26
(Lens Control)
RM-68
(Remote Control Receiver)

CD-108 BOARD



CD-108 (CCD IMAGER) SCHEMATIC DIAGRAM

— Ref. No. CD-108 BOARD: 1000 series —


1
2
3
4
5
A
B
C
D
E
F
G
CD-108 BOARD
no mark : CAMERA REC
CN301 16P
PG 16
VSUB 15
LH1 14
-9V 13
H1 12
V2 11
H2 10
V1 9
GND 8
V3 7
VSUB CHK 6
V4 5
VSUB CONT 4
15V 3
CCD OUT 2
GND 1
CL303
CL304
CL302
CL301
CL307
CL305
CL306
TO
VC-135 BOARD
(1/4)
CN801
(See Page 79)
LND301
GND
09

- **SIGNAL PATH**

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			⇛
PB			

Note on t

- Some c
imager
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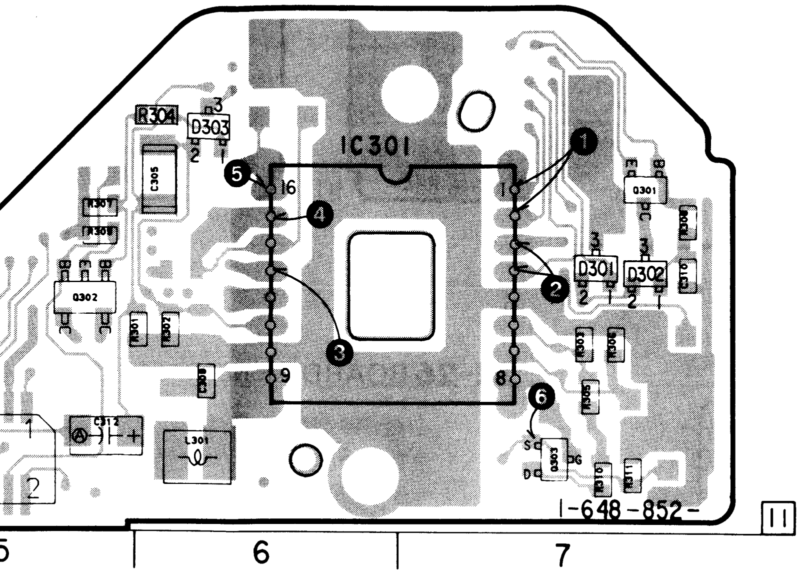
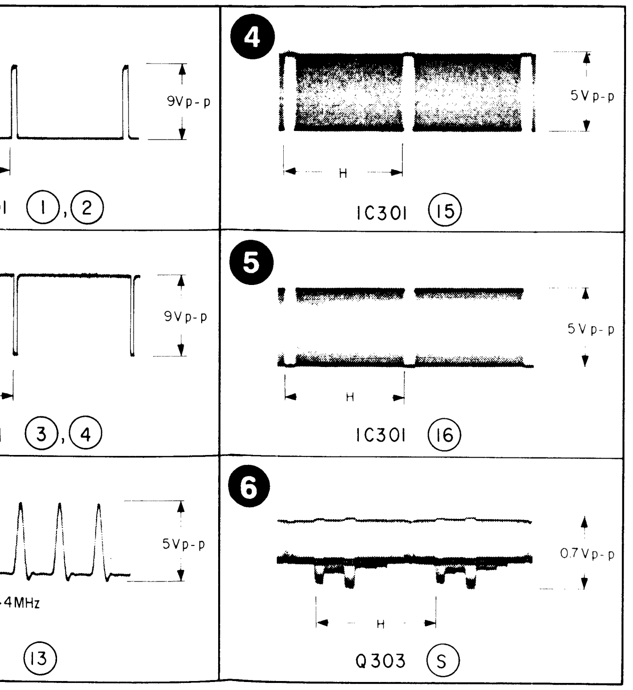
imager
data la
the can
for inpu

BOARD (CONDUCTOR SIDE)

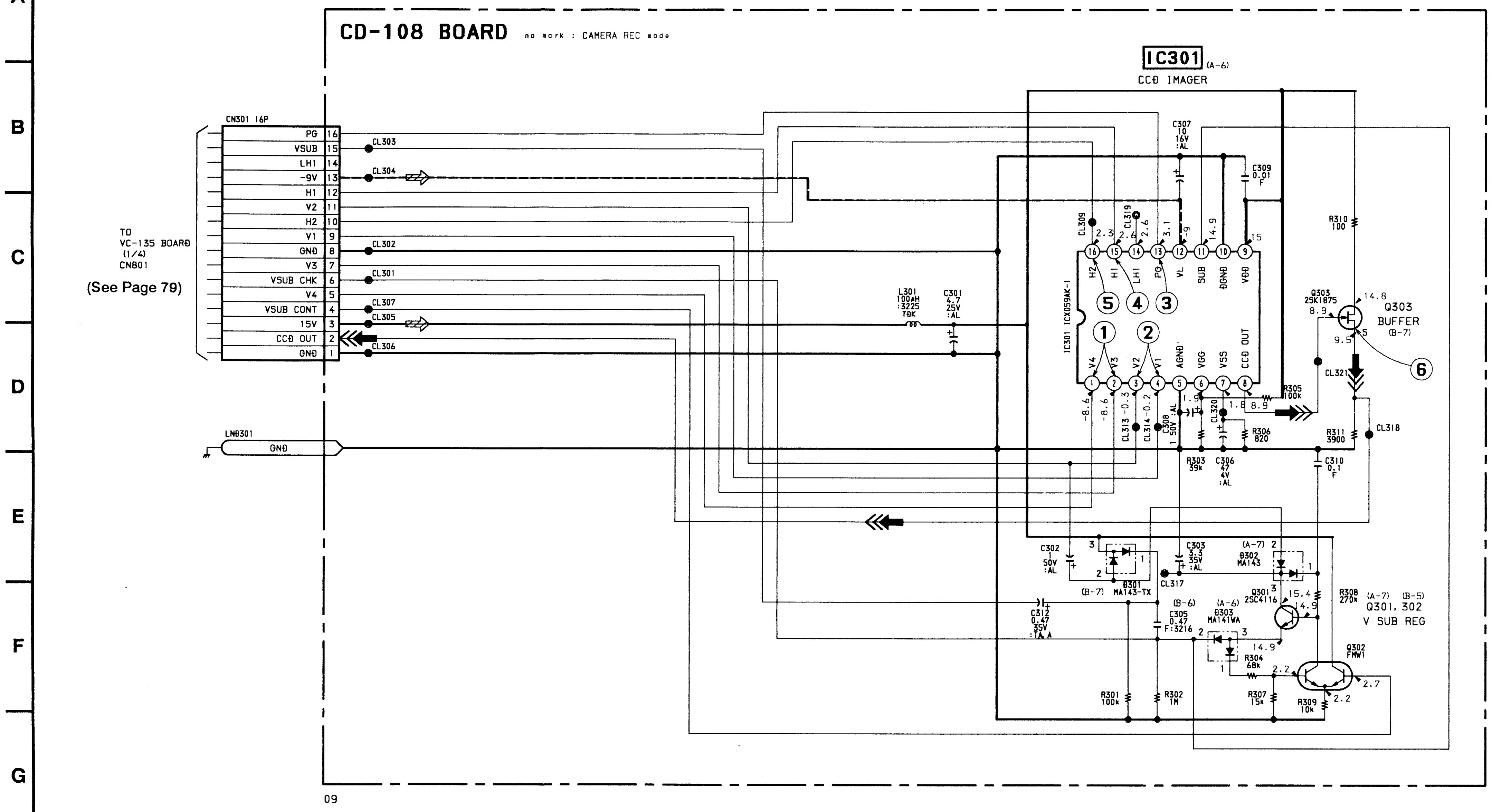

IC301
R304
D303
Q301
D301
D302
C305
C312
L301
1-648-852-
11
16
9
8
1
2
3
4
5
6
6
7

RD



CD-108 (CCD IMAGER) SCHEMATIC DIAGRAM

— Ref. No. CD-108 BOARD: 1000 series —


CD-108 BOARD
no mark : CAMERA REC mode
IC301 (A-6)
CCD IMAGER
CN301 16P
PG 16
VSUB 15
LH1 14
-9V 13
H1 12
V2 11
H2 10
V1 9
GND 8
V3 7
VSUB CHK 6
V4 5
VSUB CONT 4
15V 3
CCD OUT 2
GND 1
CL303
CL304
CL302
CL301
CL307
CL305
CL306
TO VC-135 BOARD (1/4) CN801
(See Page 79)
LN0301
GND
L301 100μH :3225 TOK
C301 4.7 25V :AL
C307 10 16V :AL
C309 0.01 F
R310 100
IC301 ICX059AK-1
H2
H1
LH1
PG
VL
SUB
0GND
VDD
V4
V3
V2
V1
AGND
VGG
VSS
CCD OUT
Q303 2SK1875
Q303 BUFFER (B-7)
14.8
8.9
9.5
CL321
CL318
R305 100k
R311 3900
C310 0.1 F
R306 820
R303 39k
C306 47 4V :AL
C308 1 50V :AL
CL313
CL314
CL320
CL309
CL319
CL317
C302 50V :AL
D301 MA143-TX
C303 3.3 35V :AL
D302 MA143
Q301 2SC4116
R308 270k
Q301, 302 V SUB REG
C312 0.47 35V :TA A
C305 0.47 F:3216
D303 MA141WA
R304 68k
Q302 FMW1
R301 100k
R302 1M
R307 15k
R309 10k
09

- **SIGNAL PATH**

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			⇛
PB			

Note on the CCD Imager replacement

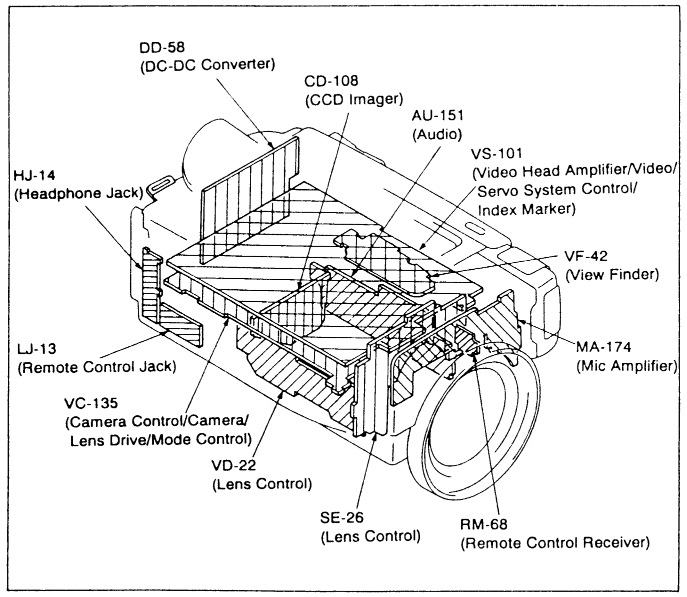
- Some of this units require the correction data by the CCD imager (IC301 on CD-108 board), some do not.
  The correction data is input in F page and addresses 1D to 2C of the camera micro processor (IC702 on VC-135 board), and also written on the CCD data label put on the shield case (upper) of the DD-58 board.
  The correction data is not required for the CCD imager supplied for repair. Therefore, when replacing the CCD imager to which the CCD data label is put, remove the CCD data label and input 00 to F page and addresses 1D to 2C of the camera micro processor. Refer to the camera adjustment for input method.
- The CCD imager is not mounted for the already mounted CD-108 board supplied as the repair parts.
  When replacing the CD-108 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.

SE-26 (LENS CONTROL), VD-22 (LENS CONTROL) PRINTED WIRING BOARDS

— Ref. No. SE-26, VD-22 BOARDS: 2000 series —

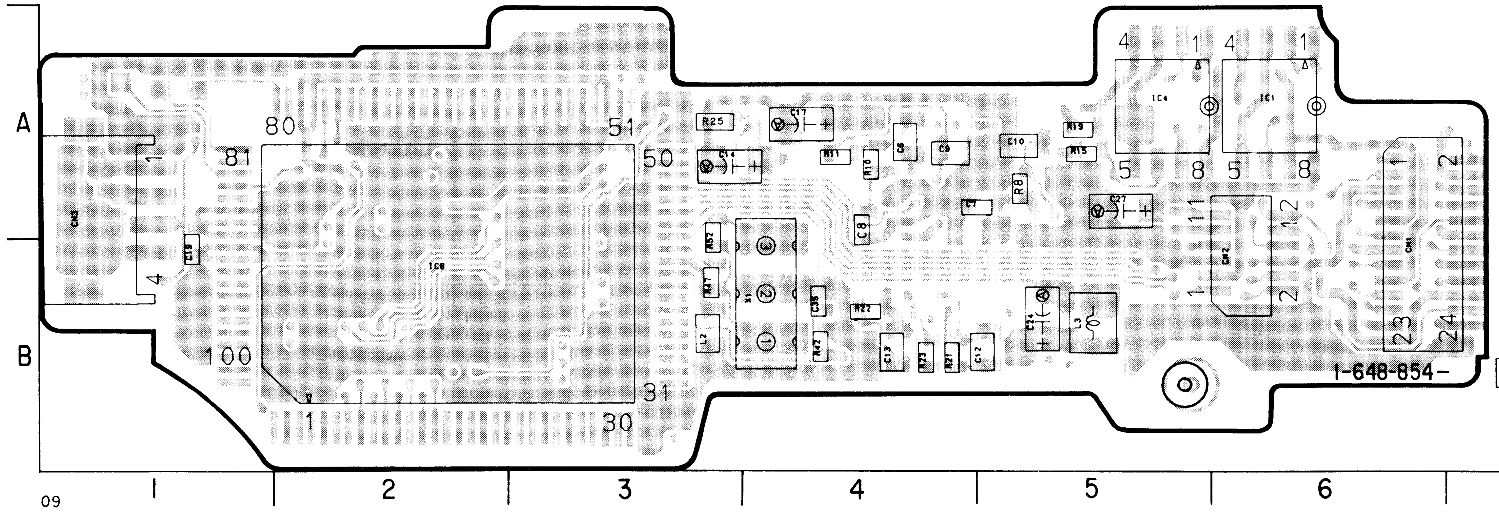
- **For printed wiring boards.**
- VD-22, SE-26 boards are the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.



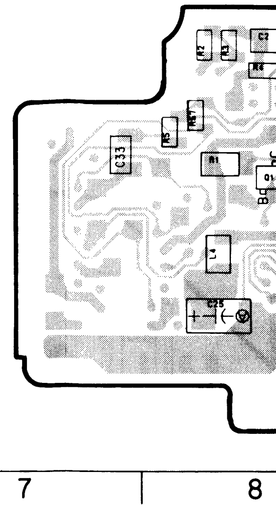
DD-58
(DC-DC Converter)
CD-108
(CCD Imager)
AU-151
(Audio)
VS-101
(Video Head Amplifier/Video/Servo System Control/Index Marker)
HJ-14
(Headphone Jack)
VF-42
(View Finder)
LJ-13
(Remote Control Jack)
MA-174
(Mic Amplifier)
VC-135
(Camera Control/Camera/Lens Drive/Mode Control)
VD-22
(Lens Control)
SE-26
(Lens Control)
RM-68
(Remote Control Receiver)

VD-22 BOARD (COMPONENT SIDE)



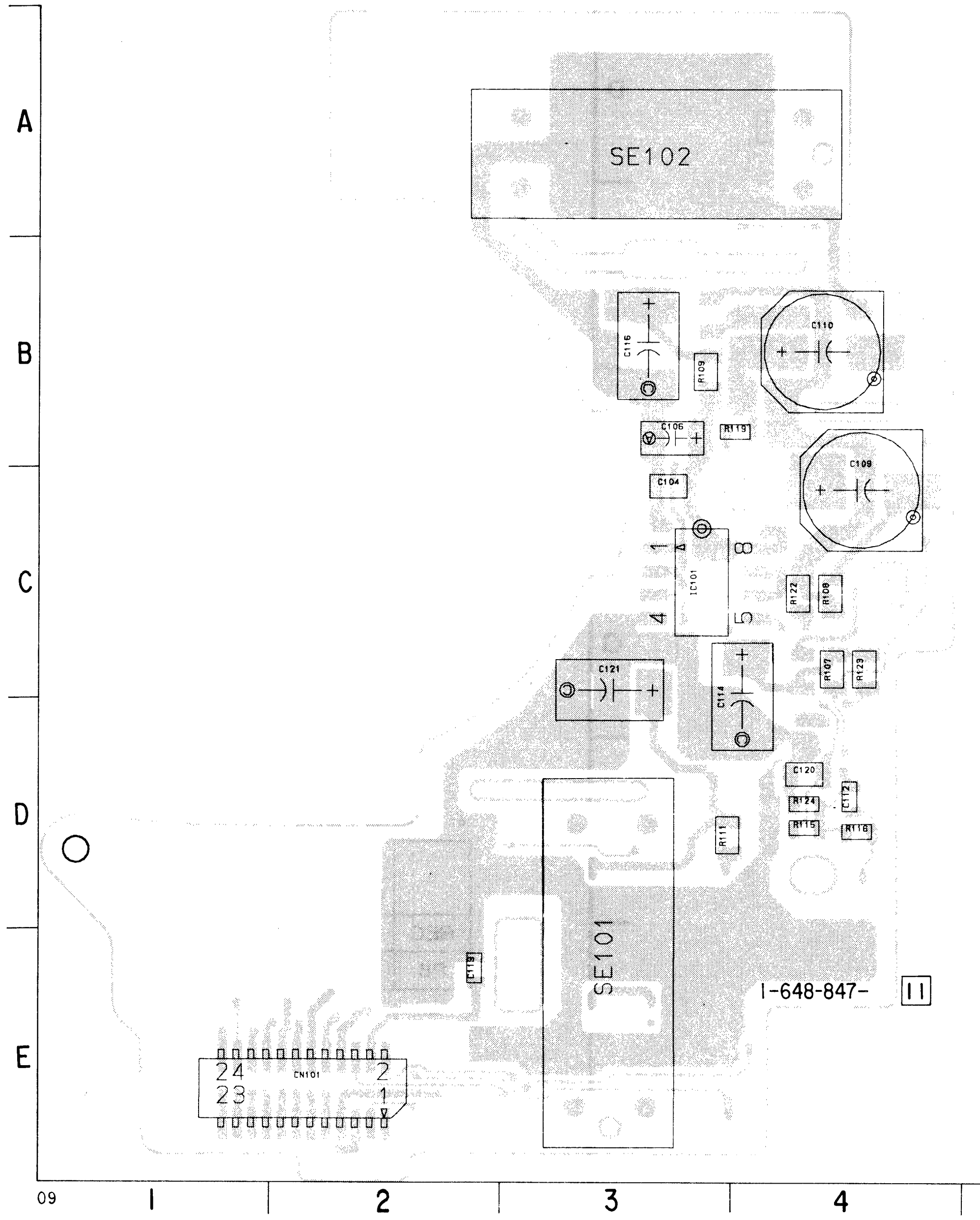
A
B
09
1
2
3
4
5
6
7
8
CN3
IC6
80
81
51
50
100
1
31
30
R25
C14
R11
C9
C10
R19
R15
IC4
IC1
4
1
5
8
C27
C8
R8
L2
R27
CN2
CN1
L3
C12
C13
C17
1
2
23
24
11
12
1-648-854-
11

VD-22 BOARD (C



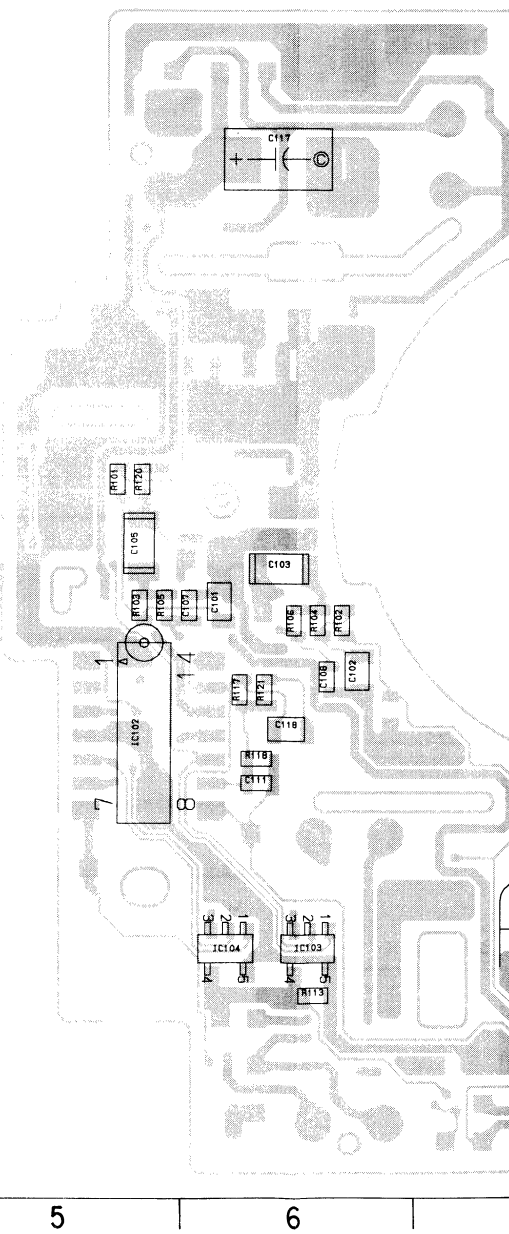
C33
R1
L4
C15

SE-26 BOARD (COMPONENT SIDE)



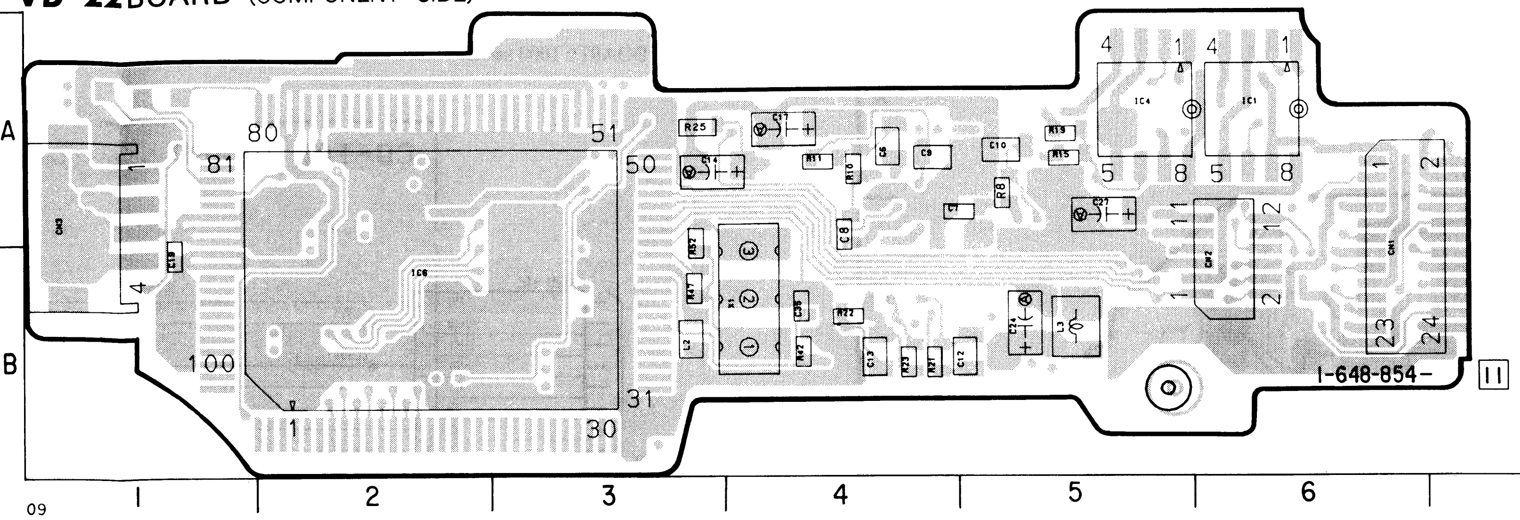
A
B
C
D
E
09
1
2
3
4
5
6
SE102
C116
R109
C110
C106
R113
C104
C109
IC101
1
4
5
8
R122
R106
C121
C114
R107
R123
C120
R124
R115
C112
R116
R111
C119
SE101
1-648-847-
11
CN101
24
23
2
1

SE-26 BOARD (CONDUCTOR SIDE)



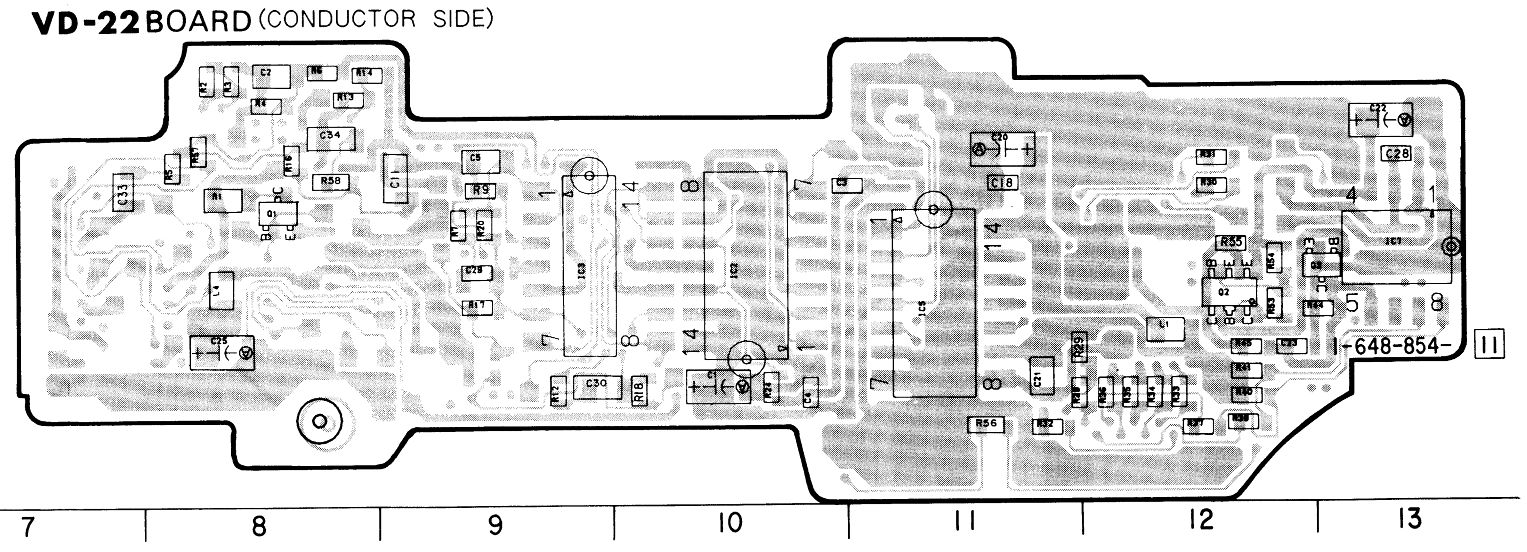
C117
R101
R120
C105
C103
IC102
1
7
8
14
R117
C118
R118
C111
IC104
IC103
R113

VD-22 BOARD (COMPONENT SIDE)



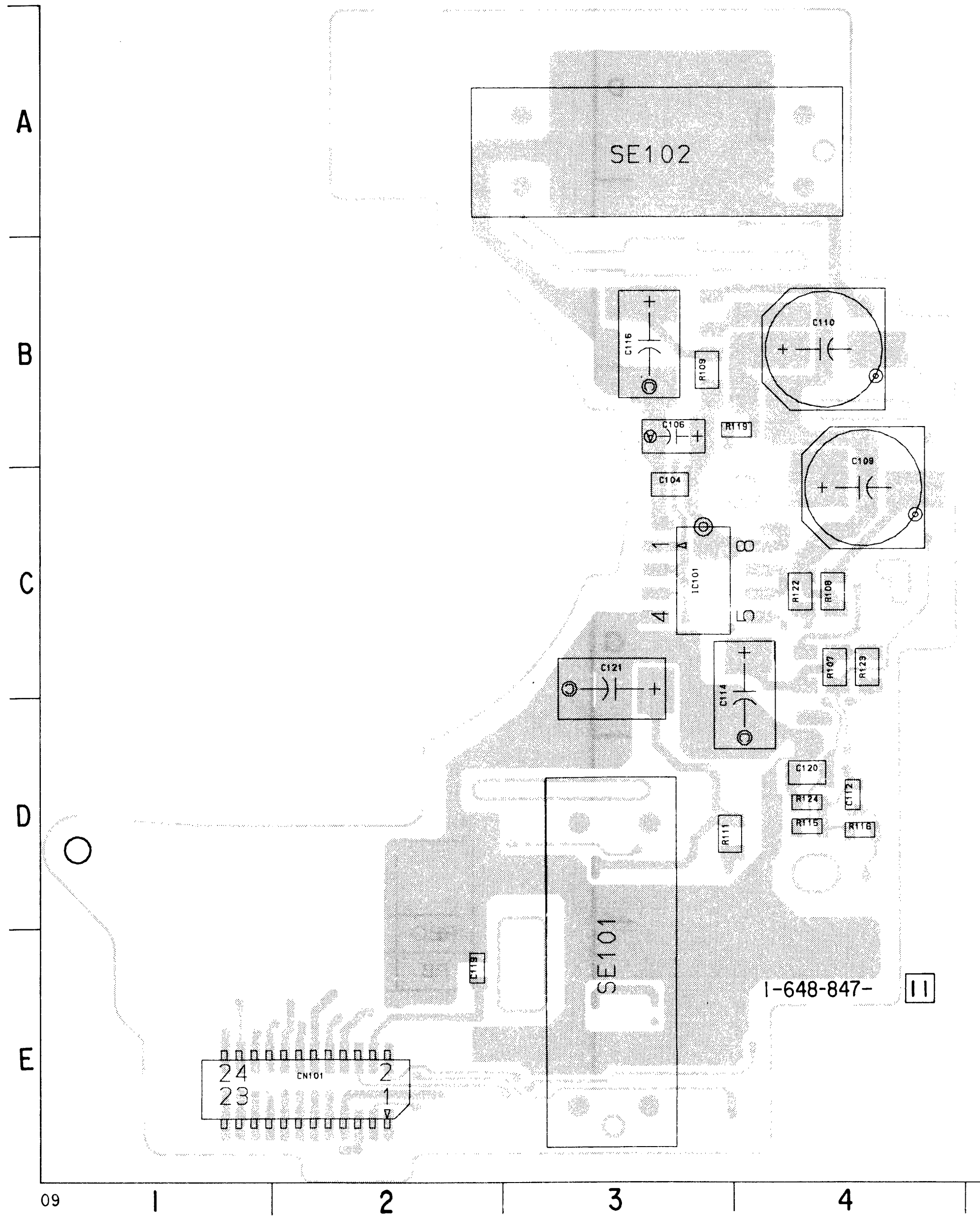
A
B
80
51
81
50
100
31
1
30
IC6
CN3
R25
C17
C14
R11
R10
C6
C9
C10
R19
R15
IC4
IC1
C7
R8
C8
C27
CN2
CN1
C20
R22
R42
R47
L2
C13
R23
R27
C12
C24
L3
1-648-854-
11
09
1
2
3
4
5
6

VD-22 BOARD (CONDUCTOR SIDE)



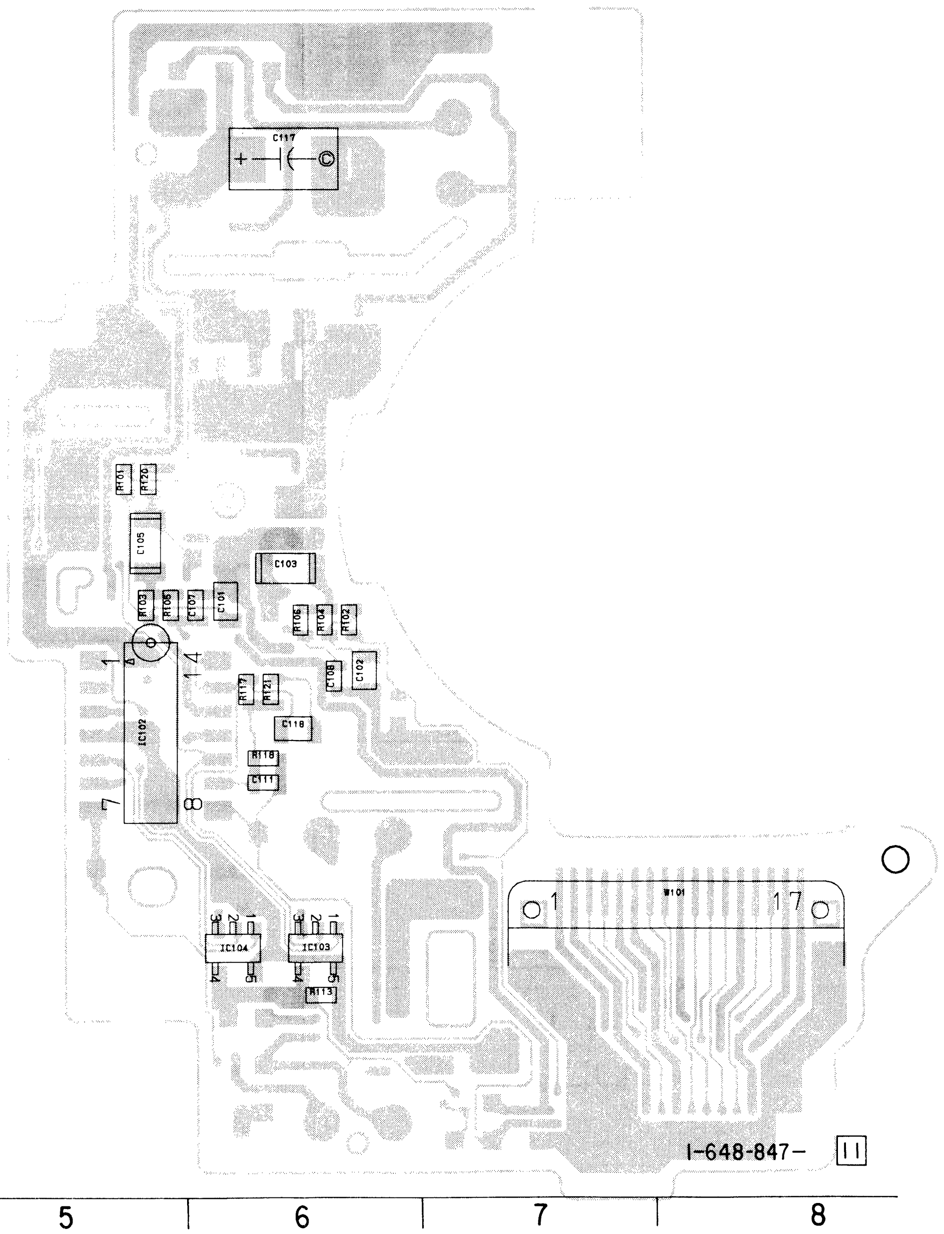
C2
R6
R14
R13
R4
C34
C33
R58
C11
R16
R1
Q1
C5
R9
IC3
IC2
IC5
C28
L4
C29
C25
R17
C30
R18
C3
C4
C20
C18
R56
C21
R32
R31
R30
C28
C23
IC7
R55
Q2
Q3
L1
1-648-854-
11
7
8
9
10
11
12
13

SE-26 BOARD (COMPONENT SIDE)



A
B
C
D
E
SE102
C116
R109
C110
C106
R110
C109
C104
IC101
R122
R108
C121
C114
R107
R123
C120
R124
R115
R116
R111
C112
C119
SE101
1-648-847-
11
CN101
24
23
2
1
09
1
2
3
4

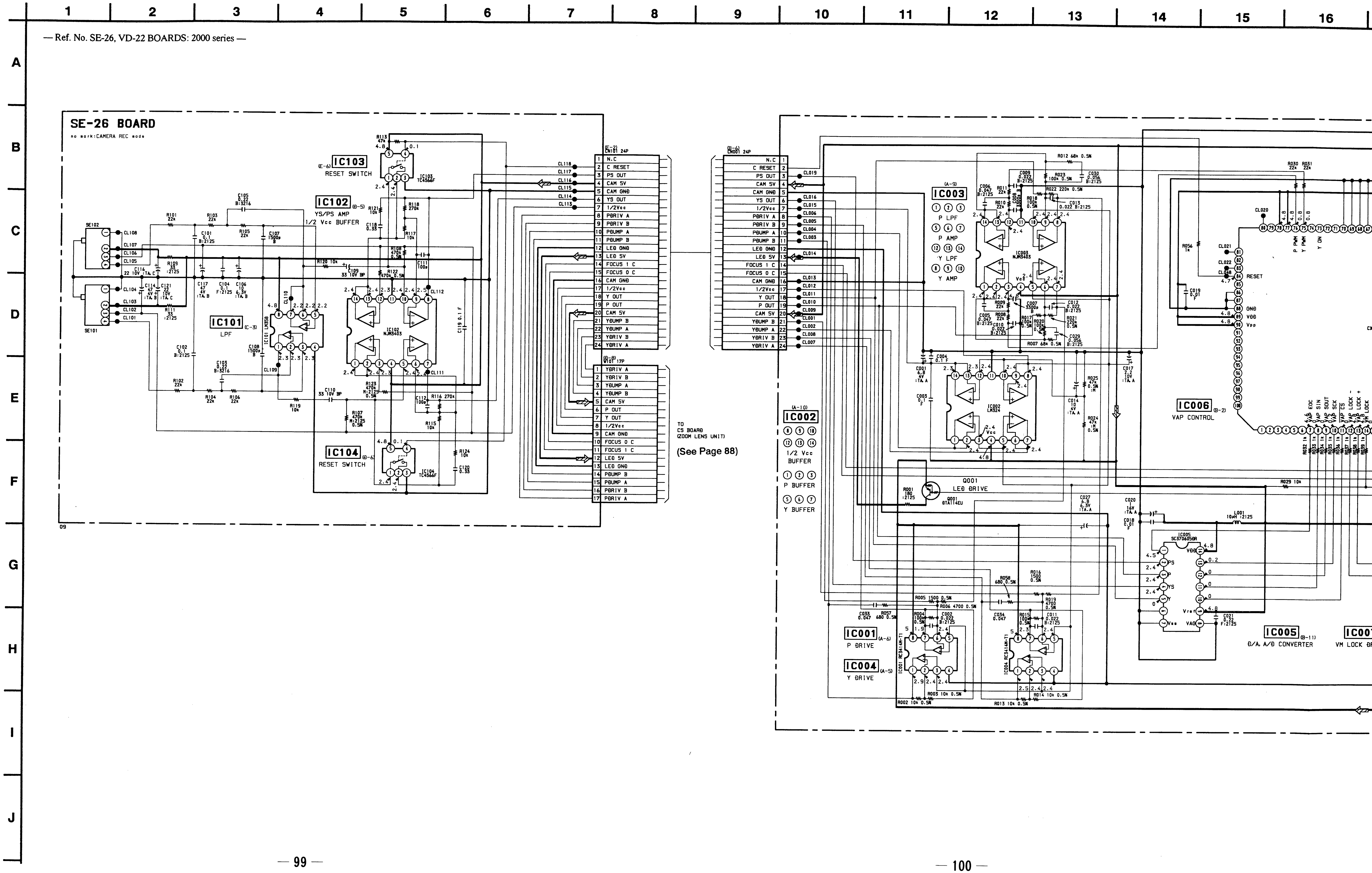
SE-26 BOARD (CONDUCTOR SIDE)

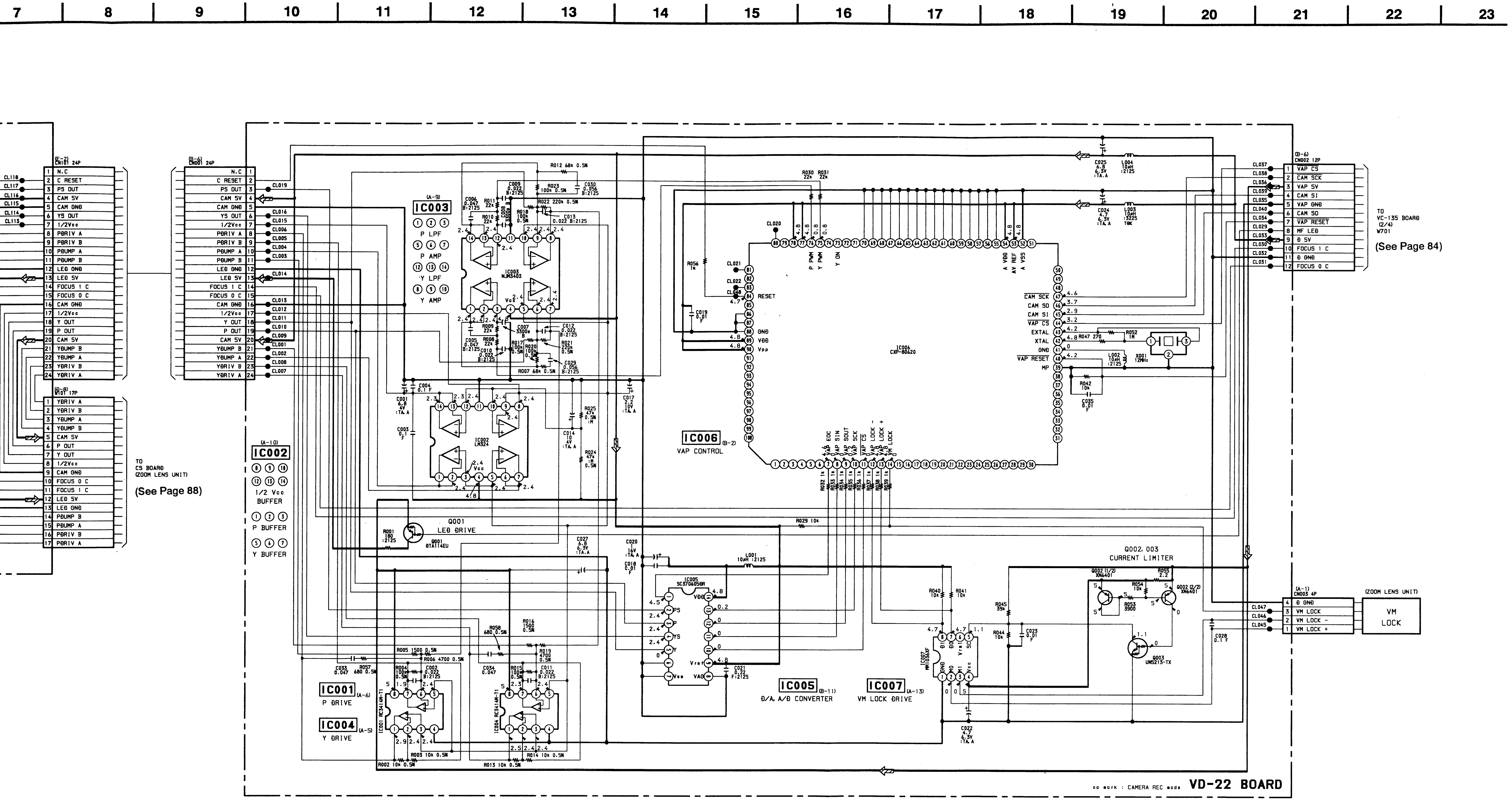


C117
R101
R120
C105
C103
R103
R105
C107
C101
R106
R104
R102
IC102
C108
C102
R117
R121
C118
R118
C111
IC104
IC103
R113
W101
1
17
1-648-847-
11
5
6
7
8

SE-26 (LENS CONTROL), VD-22 (LENS CONTROL) SCHEMATIC DIAGRAMS

— Ref. No. SE-26, VD-22 BOARDS: 2000 series —


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
SE-26 BOARD
no mark:CAMERA REC mode
SE102
SE101
IC103
RESET SWITCH
IC102
YS/PS AMP
1/2 Vcc BUFFER
IC101
LPF
IC104
RESET SWITCH
CN101 24P
1 N.C
2 C RESET
3 PS OUT
4 CAM 5V
5 CAM GND
6 YS OUT
7 1/2Vcc
8 PDRIV A
9 PDRIV B
10 PDUMP A
11 PDUMP B
12 LED GND
13 LED 5V
14 FOCUS I C
15 FOCUS O C
16 CAM GND
17 1/2Vcc
18 Y OUT
19 P OUT
20 CAM 5V
21 YDUMP B
22 YDUMP A
23 YDRIV B
24 YDRIV A
W101 17P
1 YDRIV A
2 YDRIV B
3 YDUMP A
4 YDUMP B
5 CAM 5V
6 P OUT
7 Y OUT
8 1/2Vcc
9 CAM GND
10 FOCUS O C
11 FOCUS I C
12 LED 5V
13 LED GND
14 PDUMP B
15 PDUMP A
16 PDRIV B
17 PDRIV A
TO CS BOARD (ZOOM LENS UNIT)
(See Page 88)
CN001 24P
IC003
P LPF
P AMP
Y LPF
Y AMP
IC002
1/2 Vcc BUFFER
P BUFFER
Y BUFFER
Q001
LED DRIVE
IC001
P DRIVE
IC004
Y DRIVE
IC006
VAP CONTROL
IC005
D/A, A/D CONVERTER
VM LOCK
RESET
P PWM
Y PWM
Y ON


7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
(E-2) CN101 24P
CL118
CL117
CL116
CL115
CL114
CL113
1 N.C
2 C RESET
3 PS OUT
4 CAM 5V
5 CAM GND
6 YS OUT
7 1/2Vcc
8 PDRIV A
9 PDRIV B
10 PDUMP A
11 PDUMP B
12 LED GND
13 LED 5V
14 FOCUS I C
15 FOCUS O C
16 CAM GND
17 1/2Vcc
18 Y OUT
19 P OUT
20 CAM 5V
21 YDUMP B
22 YDUMP A
23 YDRIV B
24 YDRIV A
(B-8) W101 17P
1 YDRIV A
2 YDRIV B
3 YDUMP A
4 YDUMP B
5 CAM 5V
6 P OUT
7 Y OUT
8 1/2Vcc
9 CAM GND
10 FOCUS O C
11 FOCUS I C
12 LED 5V
13 LED GND
14 PDUMP B
15 PDUMP A
16 PDRIV B
17 PDRIV A
TO
CS BOARD
(ZOOM LENS UNIT)
(See Page 88)
(B-6) CN001 24P
N.C 1
C RESET 2
PS OUT 3
CAM 5V 4
CAM GND 5
YS OUT 6
1/2Vcc 7
PDRIV A 8
PDRIV B 9
PDUMP A 10
PDUMP B 11
LED GND 12
LED 5V 13
FOCUS I C 14
FOCUS O C 15
CAM GND 16
1/2Vcc 17
Y OUT 18
P OUT 19
CAM 5V 20
YDUMP B 21
YDUMP A 22
YDRIV B 23
YDRIV A 24
CL019
CL016
CL015
CL006
CL005
CL004
CL003
CL014
CL013
CL012
CL011
CL010
CL009
CL001
CL002
CL008
CL007
(A-9)
IC003
① ② ③
P LPF
⑤ ⑥ ⑦
P AMP
⑫ ⑬ ⑭
Y LPF
⑧ ⑨ ⑩
Y AMP
IC003
NJM3403
(A-10)
IC002
⑧ ⑨ ⑩
⑫ ⑬ ⑭
1/2 Vcc
BUFFER
① ② ③
P BUFFER
⑤ ⑥ ⑦
Y BUFFER
IC002
LM324
Q001
LED DRIVE
Q001
DTA114EU
R001
180
:2125
IC001
(A-6)
P DRIVE
IC004
(A-5)
Y DRIVE
IC001 RC3414M-T1
IC004 RC3414M-T1
R012 68k 0.5%
R023 100k 0.5%
R022 220k 0.5%
R007 68k 0.5%
R029 10k
R005 1500 0.5%
R006 4700 0.5%
R058 680 0.5%
R016 1500 0.5%
R019 4700 0.5%
R002 10k 0.5%
R003 10k 0.5%
R013 10k 0.5%
R014 10k 0.5%
IC005
SC370605DR
L001
10µH :2125
IC005
(B-11)
D/A, A/D CONVERTER
IC007
(A-13)
VM LOCK DRIVE
IC007
MM1036XF
IC006
(B-2)
VAP CONTROL
IC006
CXP-80620
R030 22k
R031 22k
CL020
CL021
CL022
CL048
R056 1k
RESET
GND
VDD
Vpp
P PWM
Y PWM
Y ON
A VDD
AV REF
A VSS
CAM SCK
CAM SO
CAM SI
VAP CS
EXTAL
XTAL
GND
VAP RESET
MP
R047 270
R052 1M
L002 10µH :2125
X001 12MHz
R042 10k
C035 0.01 F
VAP EOC
VAP SIN
VAP SOUT
VAP SCK
VAP CS
VM LOCK
VM LOCK -
VM LOCK +
C025 6.8 6.3V :TA A
L004 10µH :2125
C024 4.7 6.3V :TA A
L003 10µH :3225
(B-6)
CN002 12P
CL037
CL038
CL036
CL039
CL035
CL040
CL034
CL029
CL033
CL030
CL032
CL031
1 VAP CS
2 CAM SCK
3 VAP 5V
4 CAM SI
5 VAP GND
6 CAM SO
7 VAP RESET
8 MF LED
9 D 5V
10 FOCUS I C
11 D GND
12 FOCUS O C
TO
VC-135 BOARD
(2/4)
W701
(See Page 84)
Q002, 003
CURRENT LIMITER
Q002 (1/2) XN6401
Q002 (2/2) XN6401
Q003 UN5213-TX
R055 2.2
R054 10k
R053 3900
R040 10k
R041 10k
R045 39k
R044 10k
C023 0.01 F
C028 0.1 F
C022 4.7 6.3V :TA A
(A-1)
CN003 4P
CL047
CL046
CL045
4 D GND
3 VM LOCK
2 VM LOCK -
1 VM LOCK +
(ZOOM LENS UNIT)
VM
LOCK
no mark : CAMERA REC mode
VD-22 BOARD

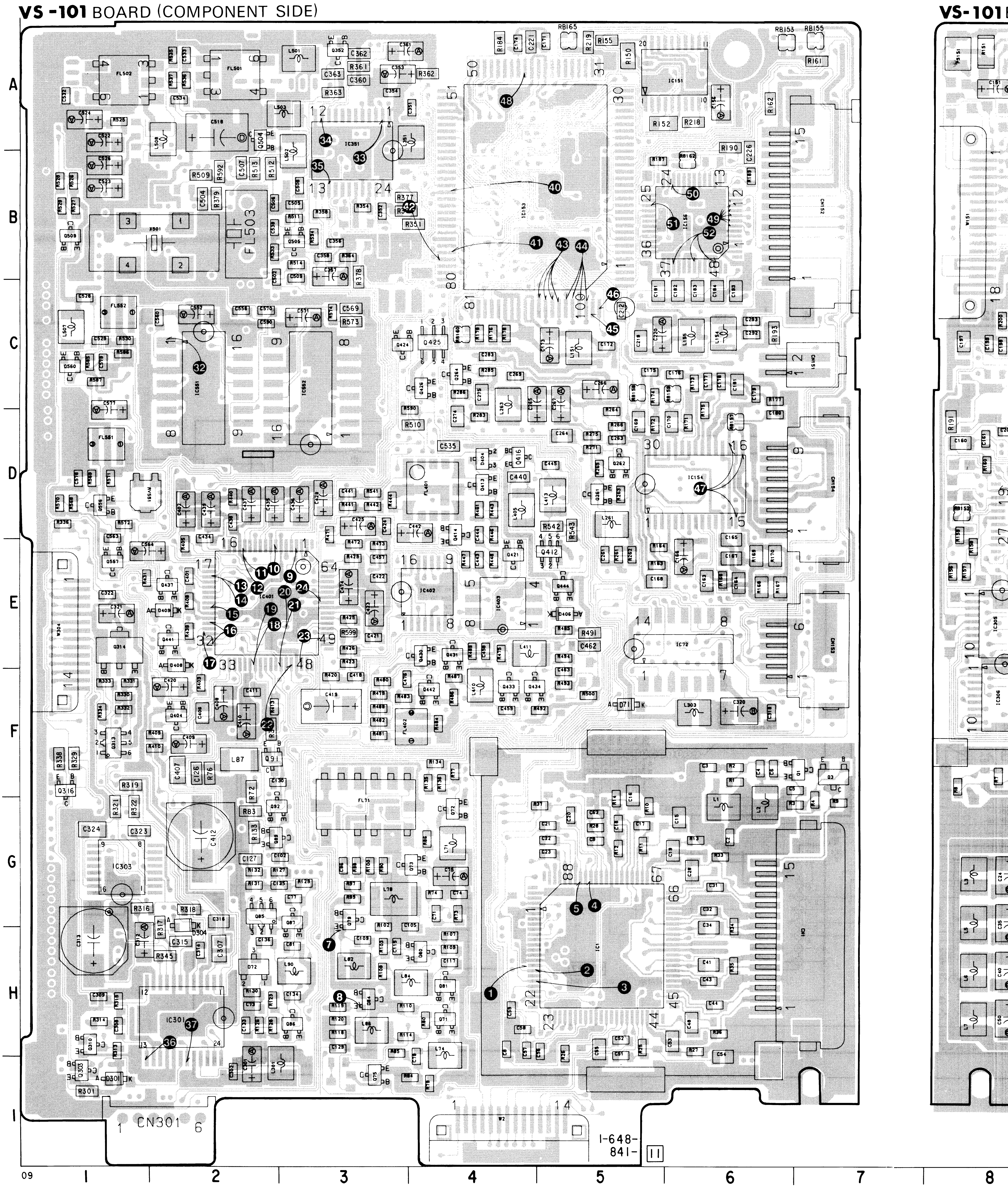
VS-101 (VIDEO HEAD AMPLIFIER, VIDEO, SERVO/SYSTEM CONTROL, INDEX MARKER) PRINTED WIRING BOARD

— Ref. No. VS-101 BOARD: 3000 series —

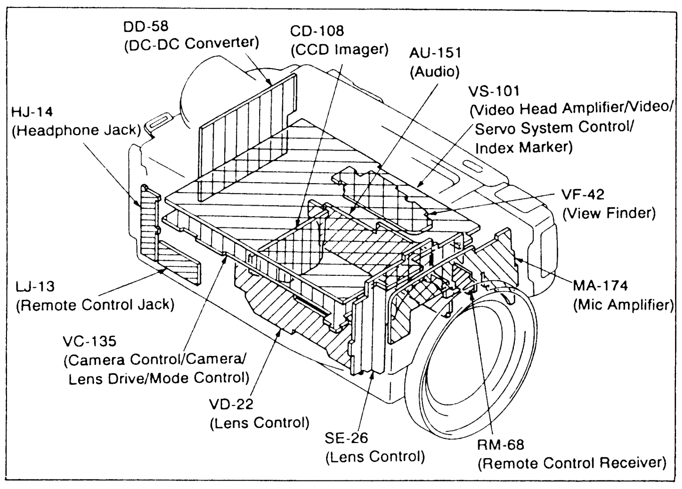
Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

- **For printed wiring boards.**
- VS-101 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

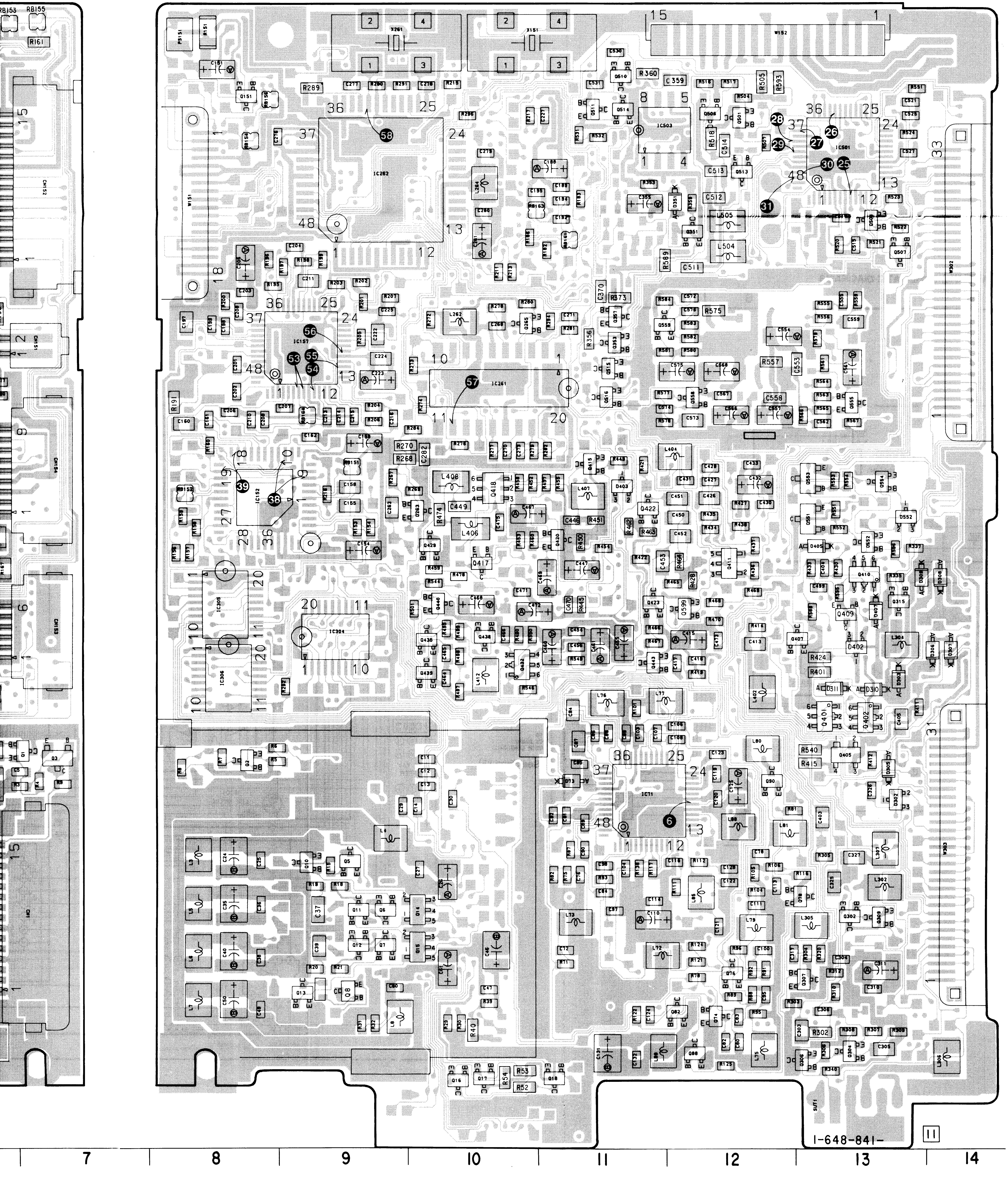
VS -101 BOARD (COMPONENT SIDE)



A
B
C
D
E
F
G
H
I
09
1
2
3
4
5
6
7
8
IC351
IC153
IC156
IC151
CN152
CN154
CN153
CN151
IC154
IC72
IC401
IC402
IC403
IC551
IC552
IC303
IC301
IC1
CN1
CN301
W301
W2
X501
FL501
FL502
FL503
FL551
FL552
FL71
FL401
FL402
1-648-841-
11
VS-101


DD-58
(DC-DC Converter)
CD-108
(CCD Imager)
AU-151
(Audio)
VS-101
(Video Head Amplifier/Video/
Servo System Control/
Index Marker)
HJ-14
(Headphone Jack)
VF-42
(View Finder)
LJ-13
(Remote Control Jack)
MA-174
(Mic Amplifier)
VC-135
(Camera Control/Camera/
Lens Drive/Mode Control)
VD-22
(Lens Control)
SE-26
(Lens Control)
RM-68
(Remote Control Receiver)

VS-101 BOARD (CONDUCTOR SIDE)


RB153
RB155
R161
CN152
CN151
CN154
CN153
CN1
X261
X151
W152
W151
W302
W303
IC262
IC157
IC261
IC152
IC305
IC304
IC306
IC503
IC501
IC71
58
56
55
53
54
57
39
38
28
27
26
29
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25
31
6
1-648-841-
11
7
8
9
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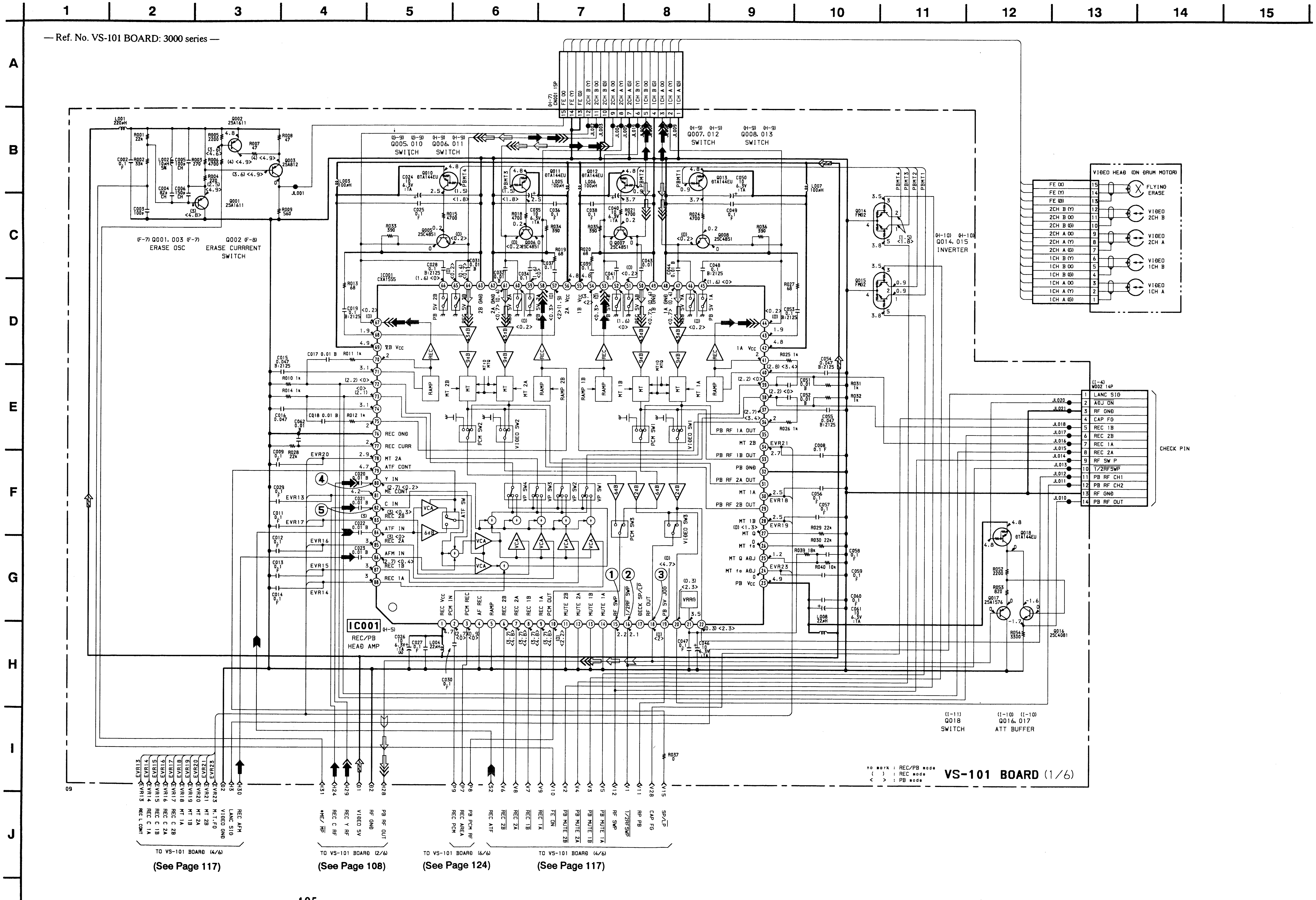
13
14

VS-101 (VIDEO HEAD AMPLIFIER) SCHEMATIC DIAGRAM

• Refer to page 102 for Printed Wiring Board.

— Ref. No. VS-101 BOARD: 3000 series —



1
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6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
Q001, 003 ERASE OSC
Q002 ERASE CURRENT SWITCH
Q005, 010 SWITCH
Q006, 011 SWITCH
Q007, 012 SWITCH
Q008, 013 SWITCH
Q014, 015 INVERTER
IC001 CXA1555
IC001 REC/PB HEAD AMP
CN001 15P
FE (X)
FE (Y)
FE (G)
2CH B (Y)
2CH B (X)
2CH B (G)
2CH A (X)
2CH A (Y)
2CH A (G)
1CH B (Y)
1CH B (X)
1CH B (G)
1CH A (X)
1CH A (Y)
1CH A (G)
VIDEO HEAD (ON DRUM MOTOR)
FLYING ERASE
VIDEO 2CH B
VIDEO 2CH A
VIDEO 1CH B
VIDEO 1CH A
W002 14P
LANC SIG
AGJ ON
RF GND
CAP FG
REC 1B
REC 2B
REC 1A
REC 2A
RF SW P
1/2RFSWP
PB RF CH1
PB RF CH2
RF GND
PB RF OUT
CHECK PIN
Q018 SWITCH
Q016, 017 ATT BUFFER
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
VS-101 BOARD (1/6)
TO VS-101 BOARD (4/6)
TO VS-101 BOARD (2/6)
TO VS-101 BOARD (6/6)
TO VS-101 BOARD (4/6)

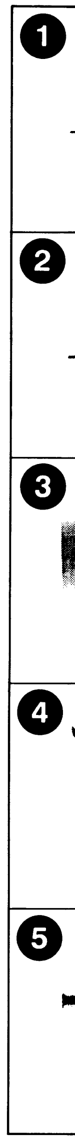
(See Page 117)

(See Page 108)

(See Page 124)

(See Page 117)

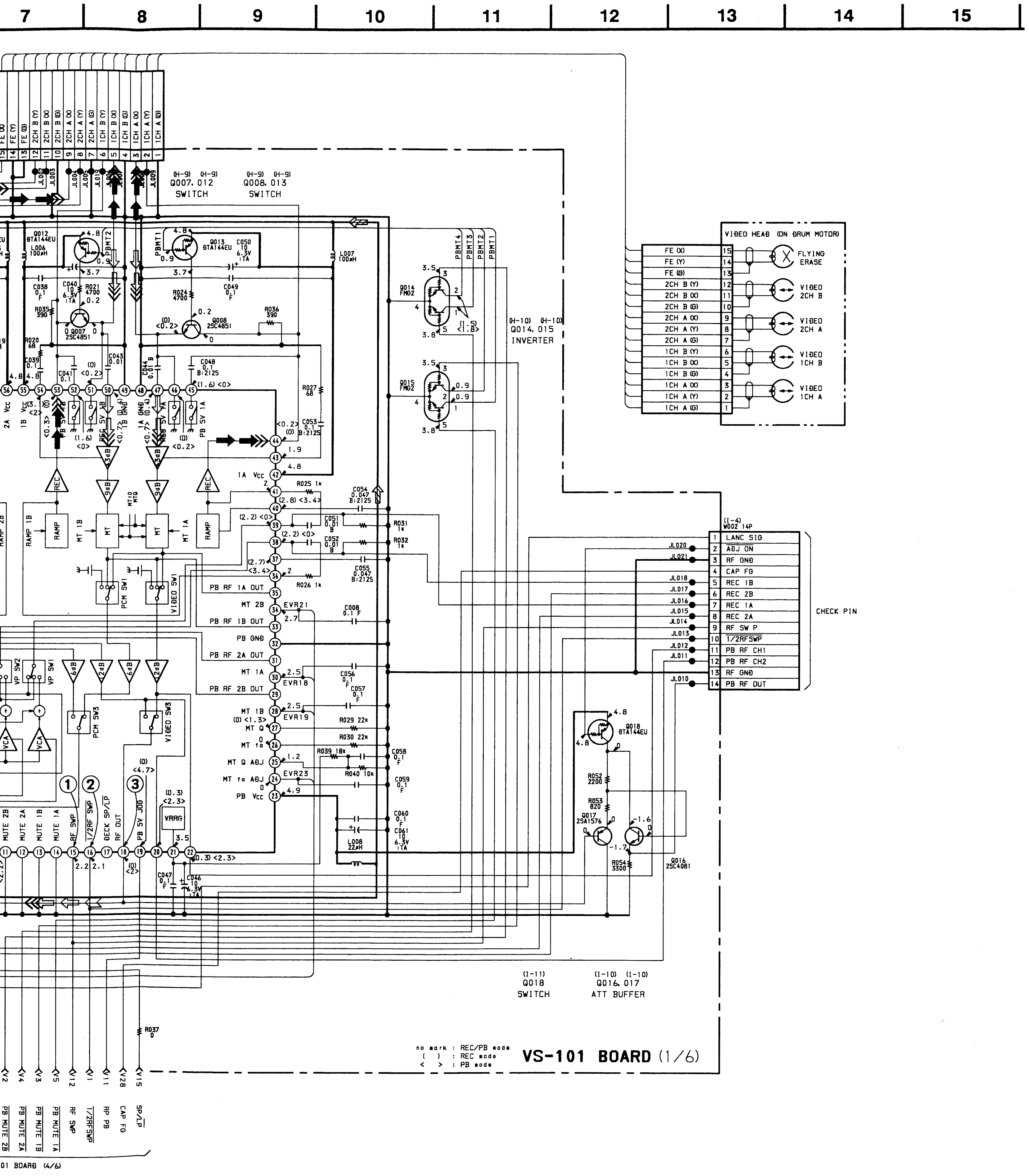
VS-



• SIG

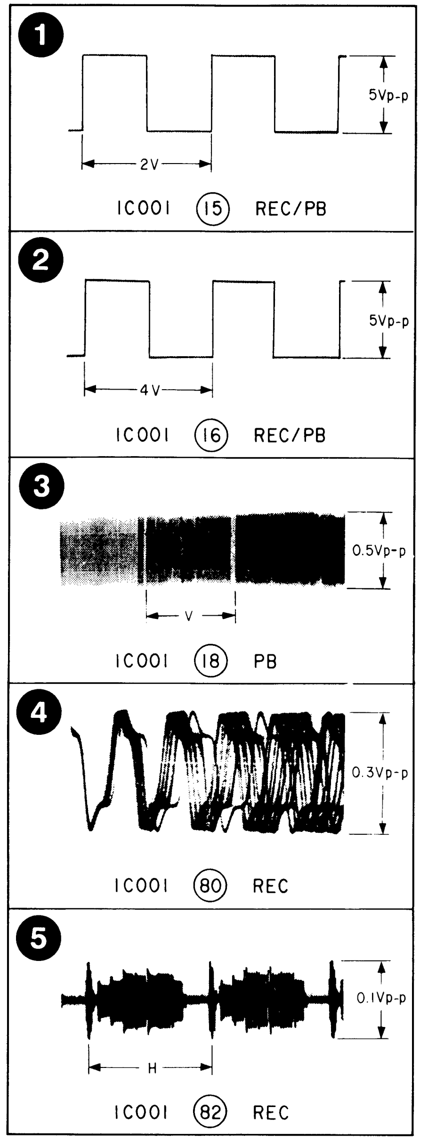
REC
PB

Drum
Drum
Drum
Capst
Capst
Capst
Ref. s


7
8
9
10
11
12
13
14
15
(H-9) (H-9)
Q007, 012
SWITCH
(H-9) (H-9)
Q008, 013
SWITCH
Q012 DTA144EU
Q013 DTA144EU
Q007 2SC4851
Q008 2SC4851
Q014 FM02
Q015 FM02
(H-10) (H-10)
Q014, 015
INVERTER
VIDEO HEAD (ON DRUM MOTOR)
FE (X)
FE (Y)
FE (G)
2CH B (Y)
2CH B (X)
2CH B (G)
2CH A (X)
2CH A (Y)
2CH A (G)
1CH B (Y)
1CH B (X)
1CH B (G)
1CH A (X)
1CH A (Y)
1CH A (G)
FLYING ERASE
VIDEO 2CH B
VIDEO 2CH A
VIDEO 1CH B
VIDEO 1CH A
(I-4)
W002 14P
LANC SIG
ADJ ON
RF GND
CAP FG
REC 1B
REC 2B
REC 1A
REC 2A
RF SW P
1/2RFSWP
PB RF CH1
PB RF CH2
RF GND
PB RF OUT
CHECK PIN
PB RF 1A OUT
MT 2B
PB RF 1B OUT
PB GND
PB RF 2A OUT
MT 1A
PB RF 2B OUT
MT 1B
MT Q
MT fo
MT Q ADJ
MT fo ADJ
PB Vcc
1A Vcc
EVR21
EVR18
EVR19
EVR23
VRRG
Q018 DTA144EU
Q017 2SA1576
Q016 2SC4081
(I-11)
Q018
SWITCH
(I-10) (I-10)
Q016, 017
ATT BUFFER
PB MUTE 2B
PB MUTE 2A
PB MUTE 1B
PB MUTE 1A
RF SWP
1/2RFSWP
RP PB
CAP FG
SP/LP
01 BOARD (4/6)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
VS-101 BOARD (1/6)

Page 117)

VS-101 BOARD (1/6)

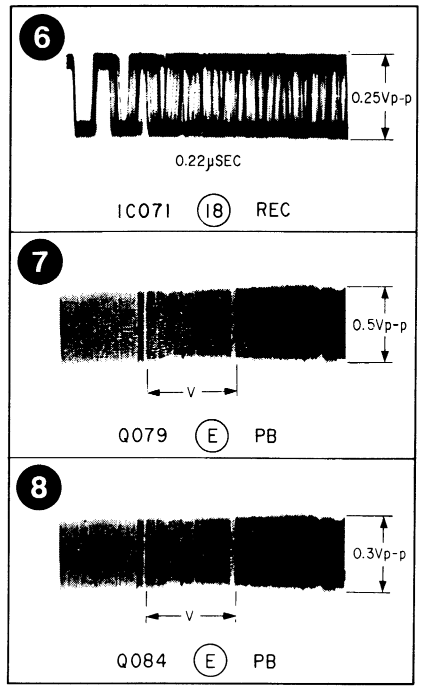


- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡	➡
PB			⇨⇨⇨	⇨

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal	➤		▷

VS-101 BOARD (2/6)



- **SIGNAL PATH**

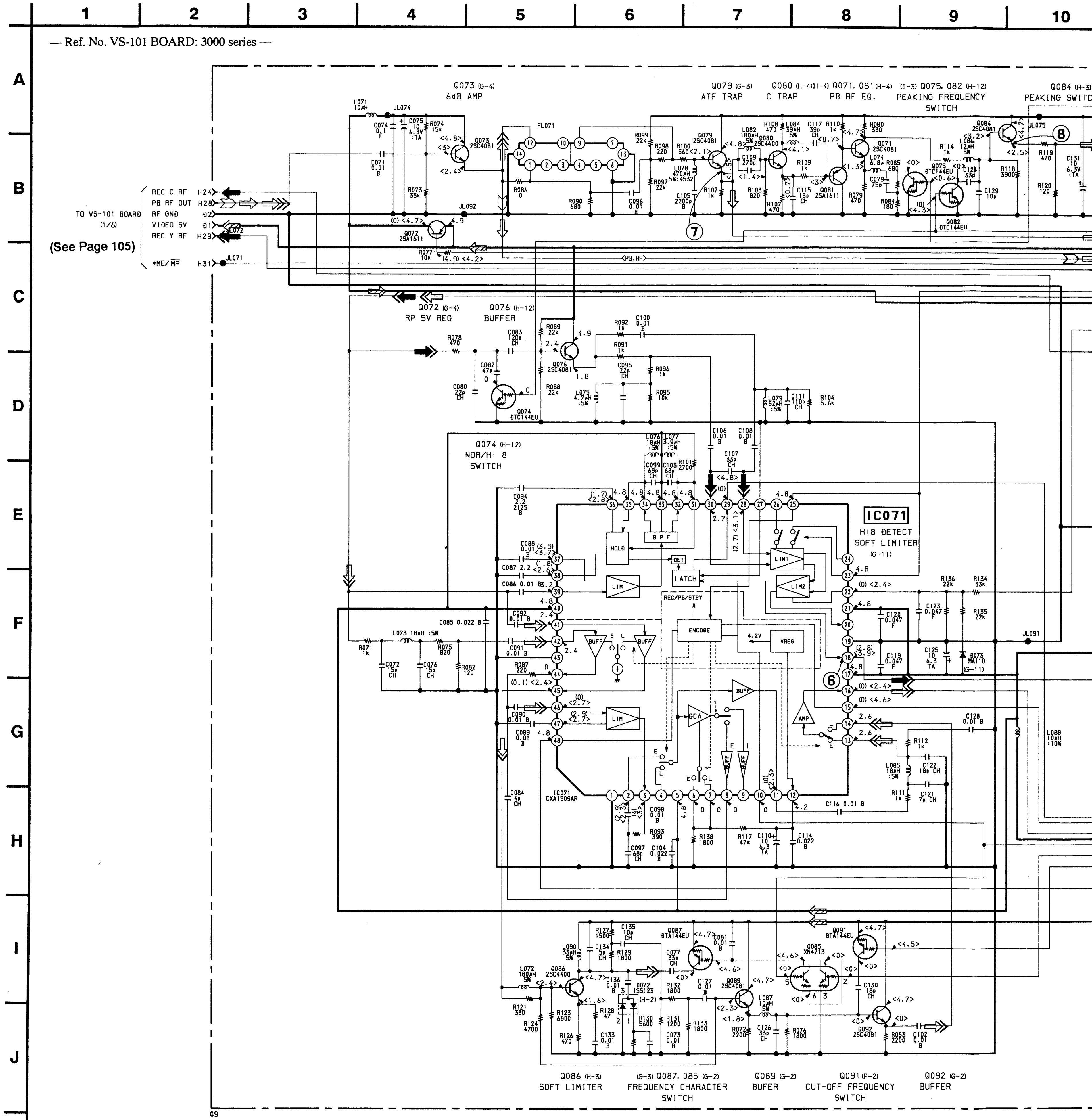
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡		➡
PB	⇨	⇨	⇛	⇨

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal			▷

VS-101 (VIDEO) SCHEMATIC DIAGRAM

- Refer to page 102 for Printed Wiring Board.

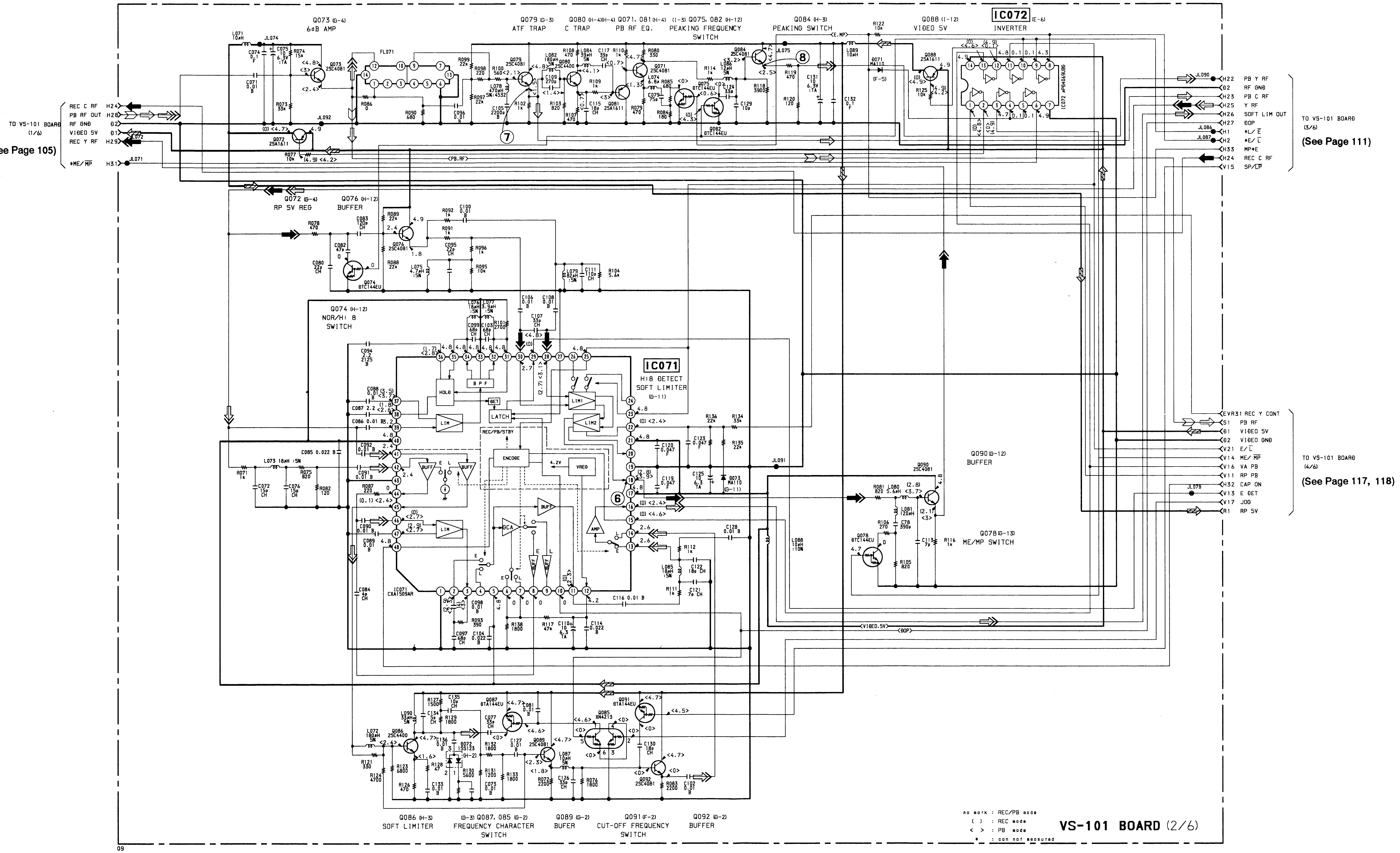
— Ref. No. VS-101 BOARD: 3000 series —


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
H
I
J
TO VS-101 BOARD (1/6)
(See Page 105)
REC C RF H24
PB RF OUT H28
RF GND B2
VIDEO 5V B1
REC Y RF H29
*ME/MP H31
Q073 (G-4) 6dB AMP
Q079 (G-3) ATF TRAP
Q080 (H-4)(H-4) C TRAP
Q071, 081 (H-4) PB RF EQ.
(I-3) Q075, 082 (H-12) PEAKING FREQUENCY SWITCH
Q084 (H-3) PEAKING SWITC
FL071
Q072 (G-4) RP 5V REG
Q076 (H-12) BUFFER
Q074 (H-12) NOR/HI 8 SWITCH
<PB.RF>
IC071 HI8 DETECT SOFT LIMITER (G-11)
IC071 CXA1509AR
HOLD
BPF
DET
LATCH
LIM
LIM1
LIM2
REC/PB/STBY
ENCODE
4.2V
VREG
BUFF
GCA
AMP
JL091
Q086 (H-3) SOFT LIMITER
(G-3) Q087, 085 (G-2) FREQUENCY CHARACTER SWITCH
Q089 (G-2) BUFER
Q091 (F-2) CUT-OFF FREQUENCY SWITCH
Q092 (G-2) BUFFER
09

01 (VIDEO) SCHEMATIC DIAGRAM

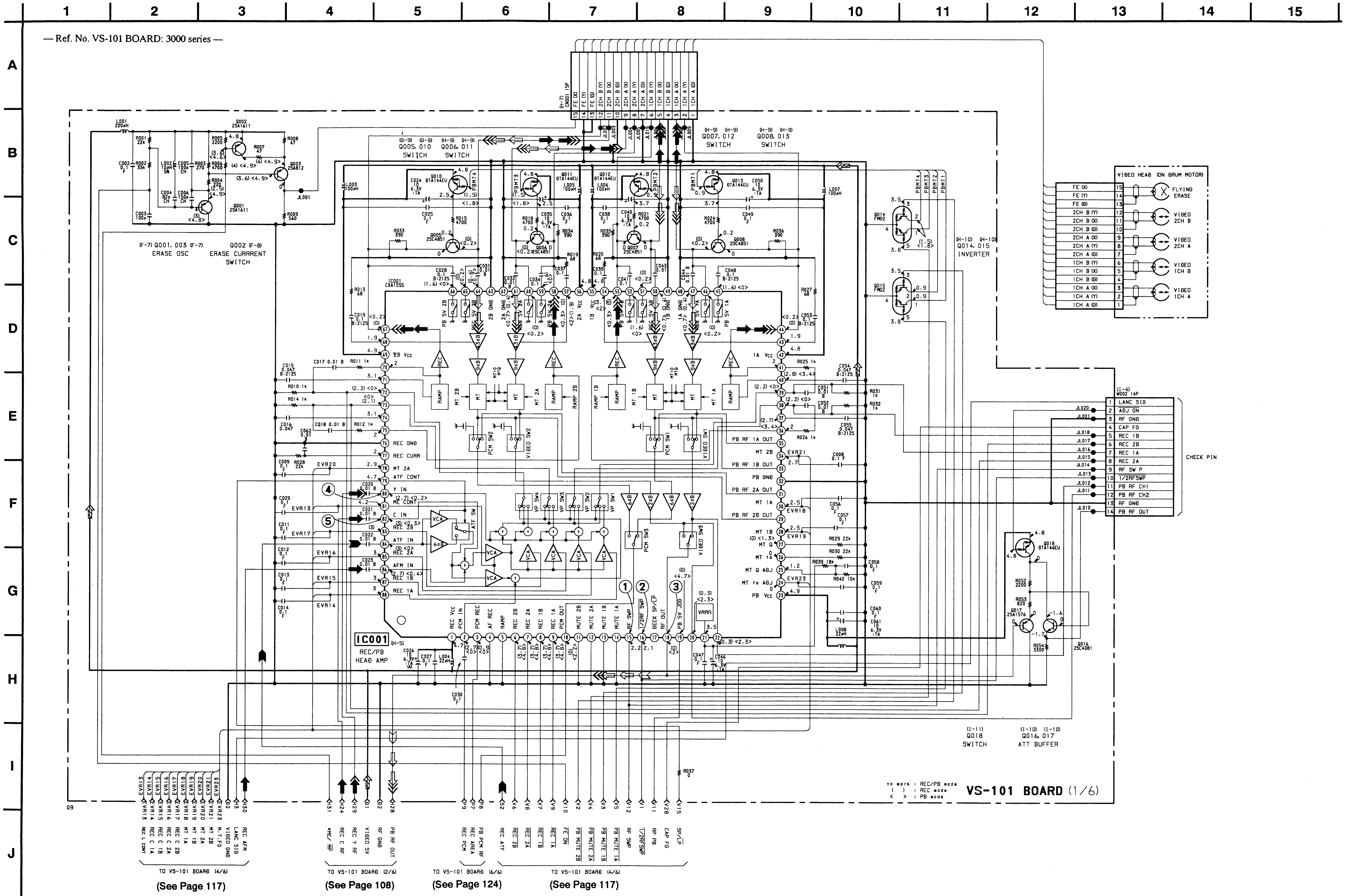
- Refer to page 102 for Printed Wiring Board.

Ref. No. VS-101 BOARD: 3000 series —


TO VS-101 BOARD (1/6)
ee Page 105)
REC C RF H24
PB RF OUT H28
RF GND D2
VIDEO 5V D1
REC Y RF H29
*ME/MP H31
Q073 (G-4) 6dB AMP
Q079 (G-3) ATF TRAP
Q080 (H-4) C TRAP
Q071, 081 (H-4) PB RF EQ.
Q075, 082 (H-12) PEAKING FREQUENCY SWITCH
Q084 (H-3) PEAKING SWITCH
Q088 (I-12) VIDEO 5V
IC072 (E-6) INVERTER
IC072 μPD4069UBG
FL071
⑦
⑧
⑥
Q072 (G-4) RP 5V REG
Q076 (H-12) BUFFER
Q074 (H-12) NOR/HI 8 SWITCH
IC071 HI8 DETECT SOFT LIMITER (G-11)
IC071 CXA1509AR
HOLD
BPF
LIM
LATCH
LIM1
LIM2
REC/PB/STBY
ENCODE
VREG
BUFF
GCA
AMP
Q090 (G-12) BUFFER
Q078 (G-13) ME/MP SWITCH
Q086 (H-3) SOFT LIMITER
(G-3) Q087, 085 (G-2) FREQUENCY CHARACTER SWITCH
Q089 (G-2) BUFER
Q091 (F-2) CUT-OFF FREQUENCY SWITCH
Q092 (G-2) BUFFER
H22 PB Y RF
D2 RF GND
H23 PB C RF
H25 Y RF
H26 SOFT LIM OUT
H27 DOP
H1 *L/E
H2 *E/L
H33 MP*E
H24 REC C RF
V15 SP/LP
TO VS-101 BOARD (3/6)
(See Page 111)
EVR31 REC Y CONT
S1 PB RF
B1 VIDEO 5V
B2 VIDEO GND
V21 E/L
V14 ME/MP
V16 VA PB
V11 RP PB
H32 CAP ON
V13 E DET
V17 JOG
R1 RP 5V
TO VS-101 BOARD (4/6)
(See Page 117, 118)
<VIDEO.5V>
<DOP>
<PB.RF>
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
* : can not measured
VS-101 BOARD (2/6)
09

VS-101 (VIDEO HEAD AMPLIFIER) SCHEMATIC DIAGRAM

- Refer to page 102 for Printed Wiring Board.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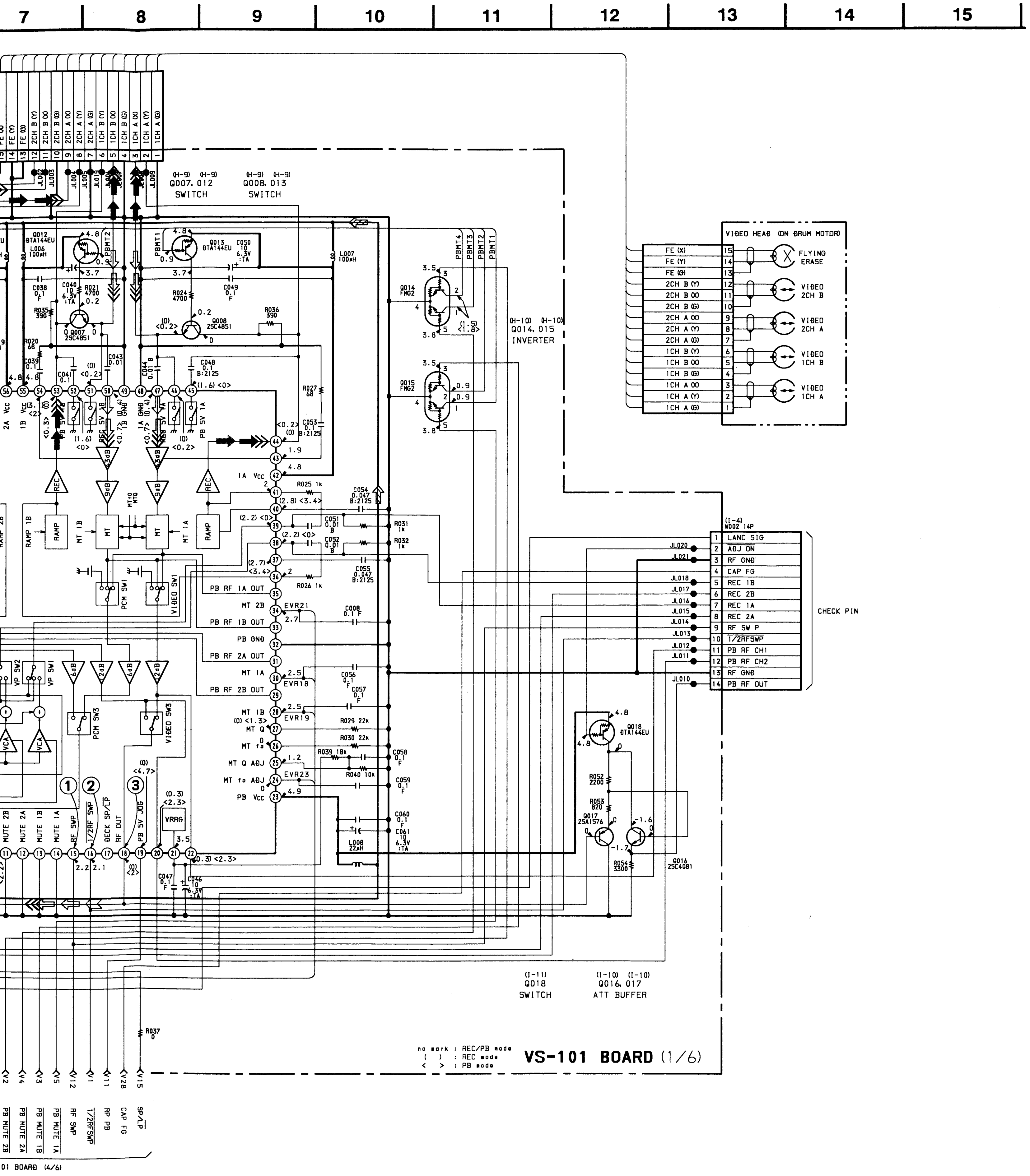
I
J
— Ref. No. VS-101 BOARD: 3000 series —
(H-7) CN001 15P
15 FE (X)
14 FE (Y)
13 FE (G)
12 2CH B (Y)
11 2CH B (X)
10 2CH B (G)
9 2CH A (X)
8 2CH A (Y)
7 2CH A (G)
6 1CH B (Y)
5 1CH B (X)
4 1CH B (G)
3 1CH A (X)
2 1CH A (Y)
1 1CH A (G)
(F-7) Q001, 003 (F-7) ERASE OSC
Q002 (F-8) ERASE CURRRENT SWITCH
Q005, 010 SWITCH
Q006, 011 SWITCH
Q007, 012 SWITCH
Q008, 013 SWITCH
(H-10) (H-10) Q014, 015 INVERTER
VIDEO HEAD (ON DRUM MOTOR)
FLYING ERASE
VIDEO 2CH B
VIDEO 2CH A
VIDEO 1CH B
VIDEO 1CH A
(I-4) W002 14P
1 LANC SIG
2 ADJ ON
3 RF GND
4 CAP FG
5 REC 1B
6 REC 2B
7 REC 1A
8 REC 2A
9 RF SW P
10 1/2RFSWP
11 PB RF CH1
12 PB RF CH2
13 RF GND
14 PB RF OUT
CHECK PIN
IC001 CXA1555
IC001 (H-5) REC/PB HEAD AMP
(I-11) Q018 SWITCH
(I-10) (I-10) Q016, 017 ATT BUFFER
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
VS-101 BOARD (1/6)
EVR13 REC L CONT
EVR14 REC C 1A
EVR15 REC C 1B
EVR16 REC C 2A
EVR17 REC C 2B
EVR18 MT 1A
EVR19 MT 1B
EVR20 MT 2A
EVR21 MT 2B
EVR23 M.T.FO
D2 VIDEO GND
H3 LANC SIG
H30 REC AFM
TO VS-101 BOARD (4/6)
(See Page 117)
H31 *ME/MP
H24 REC C RF
H29 REC Y RF
D1 VIDEO 5V
D2 RF GND
H28 PB RF OUT
TO VS-101 BOARD (2/6)
(See Page 108)
P9 REC PCM
P7 REC AREA
P8 PB PCM RF
TO VS-101 BOARD (6/6)
(See Page 124)
S2 REC ATF
V6 REC 2B
V8 REC 2A
V7 REC 1B
V9 REC 1A
V10 FE ON
V2 PB MUTE 2B
V4 PB MUTE 2A
V3 PB MUTE 1B
V5 PB MUTE 1A
V12 RF SWP
V1 1/2RFSWP
V11 RP PB
V28 CAP FG
V15 SP/LP
TO VS-101 BOARD (4/6)
(See Page 117)


7
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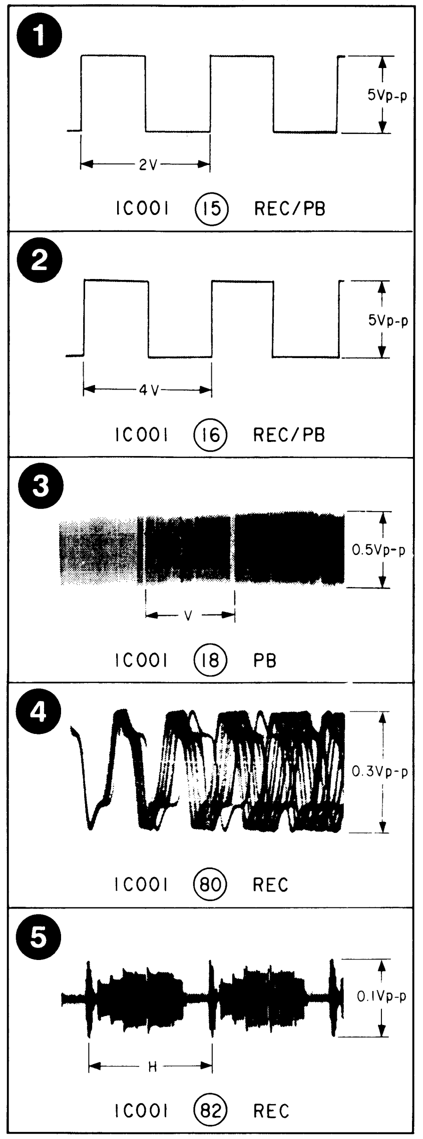
14
15
(H-9) (H-9) Q007, 012 SWITCH
(H-9) (H-9) Q008, 013 SWITCH
Q012 DTA144EU
L006 100µH
Q013 DTA144EU
C050 10 6.3V :TA
L007 100µH
PBMT1
PBMT2
C038 0.1 F
C040 10 6.3V :TA
R021 4700
R024 4700
C049 0.1 F
R035 390
Q007 2SC4851
Q008 2SC4851
R036 390
R020 68
C039 0.1
C041 0.1
C043 0.01
C044 0.01 B
C048 0.1 B:2125
R027 68
C053 0.1 B:2125
Q014 FMG2
Q015 FMG2
PBMT4
PBMT3
PBMT2
PBMT1
(H-10) (H-10) Q014, 015 INVERTER
VIDEO HEAD (ON DRUM MOTOR)
FE (X)
FE (Y)
FE (G)
2CH B (Y)
2CH B (X)
2CH B (G)
2CH A (X)
2CH A (Y)
2CH A (G)
1CH B (Y)
1CH B (X)
1CH B (G)
1CH A (X)
1CH A (Y)
1CH A (G)
FLYING ERASE
VIDEO 2CH B
VIDEO 2CH A
VIDEO 1CH B
VIDEO 1CH A
REC
PB
RAMP
MT 1B
MT
MT 1A
PCM SW1
VIDEO SW1
1A Vcc
R025 1k
C054 0.047 B:2125
R031 1k
R032 1k
C051 0.01 B
C052 0.01 B
C055 0.047 B:2125
R026 1k
PB RF 1A OUT
MT 2B
EVR21
C008 0.1 F
PB RF 1B OUT
PB GND
PB RF 2A OUT
MT 1A
EVR18
C056 0.1 F
C057 0.1 F
PB RF 2B OUT
MT 1B
EVR19
MT Q
MT fo
R029 22k
R030 22k
R039 18k
R040 10k
C058 0.1 F
MT Q ADJ
MT fo ADJ
EVR23
C059 0.1 F
PB Vcc
C060 0.1 F
C061 10 6.3V :TA
L008 22µH
VP SW1
VP SW2
PCM SW3
VIDEO SW3
VCA
VRRG
MUTE 2B
MUTE 2A
MUTE 1B
MUTE 1A
RF SWP
1/2RF SWP
DECK SP/LP
RF OUT
PB 5V JOG
C047 0.1 F
C046 10 6.3V
(1-4) WD02 14P
1 LANC SIG
2 ADJ ON
3 RF GND
4 CAP FG
5 REC 1B
6 REC 2B
7 REC 1A
8 REC 2A
9 RF SW P
10 1/2RFSWP
11 PB RF CH1
12 PB RF CH2
13 RF GND
14 PB RF OUT
JL020
JL021
JL018
JL017
JL016
JL015
JL014
JL013
JL012
JL011
JL010
CHECK PIN
Q018 DTA144EU
R052 2200
R053 820
Q017 2SA1576
Q016 2SC4081
R054 3300
(I-11) Q018 SWITCH
(I-10) (I-10) Q016, 017 ATT BUFFER
R037 0
PB MUTE 2B
PB MUTE 2A
PB MUTE 1B
PB MUTE 1A
RF SWP
1/2RFSWP
RP PB
CAP FG
SP/LP
01 BOARD (4/6)

no mark : REC/PB mode
( ) : REC mode
< > : PB mode

VS-101 BOARD (1/6)

Page 117)

VS-101 BOARD (1/6)

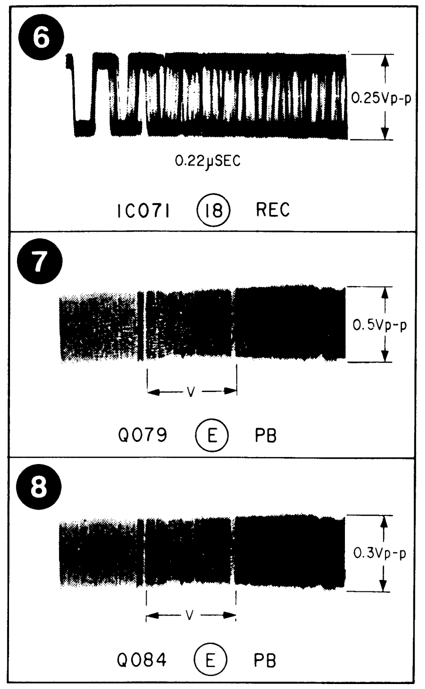


- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»»	➡
PB			⇨»»	⇨

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal	➤		▷

VS-101 BOARD (2/6)



- **SIGNAL PATH**

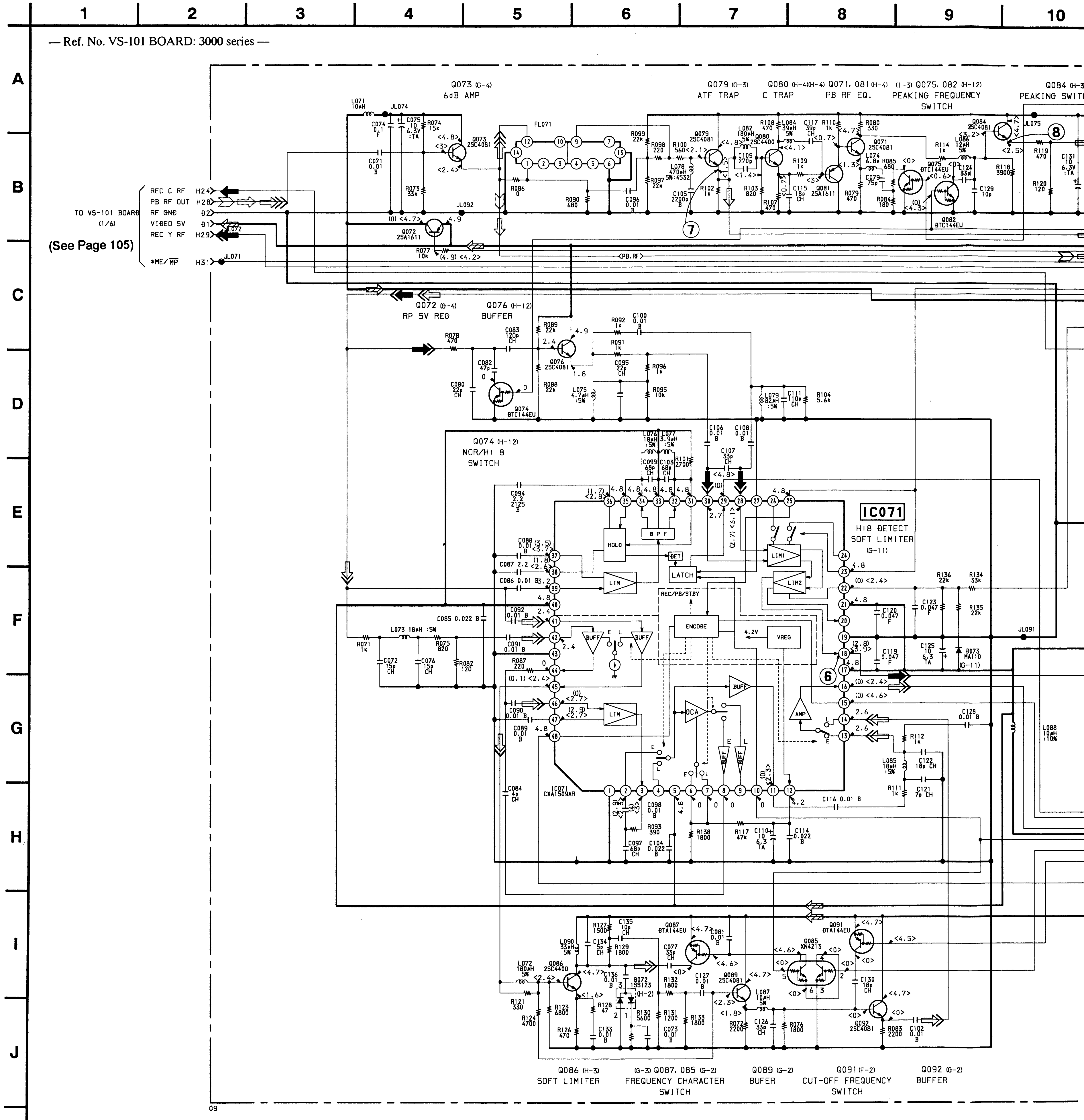
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡		➡
PB	⇨	⇨⇨	⇨⇨⇨	⇨

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal			▷

VS-101 (VIDEO) SCHEMATIC DIAGRAM

- Refer to page 102 for Printed Wiring Board.

— Ref. No. VS-101 BOARD: 3000 series —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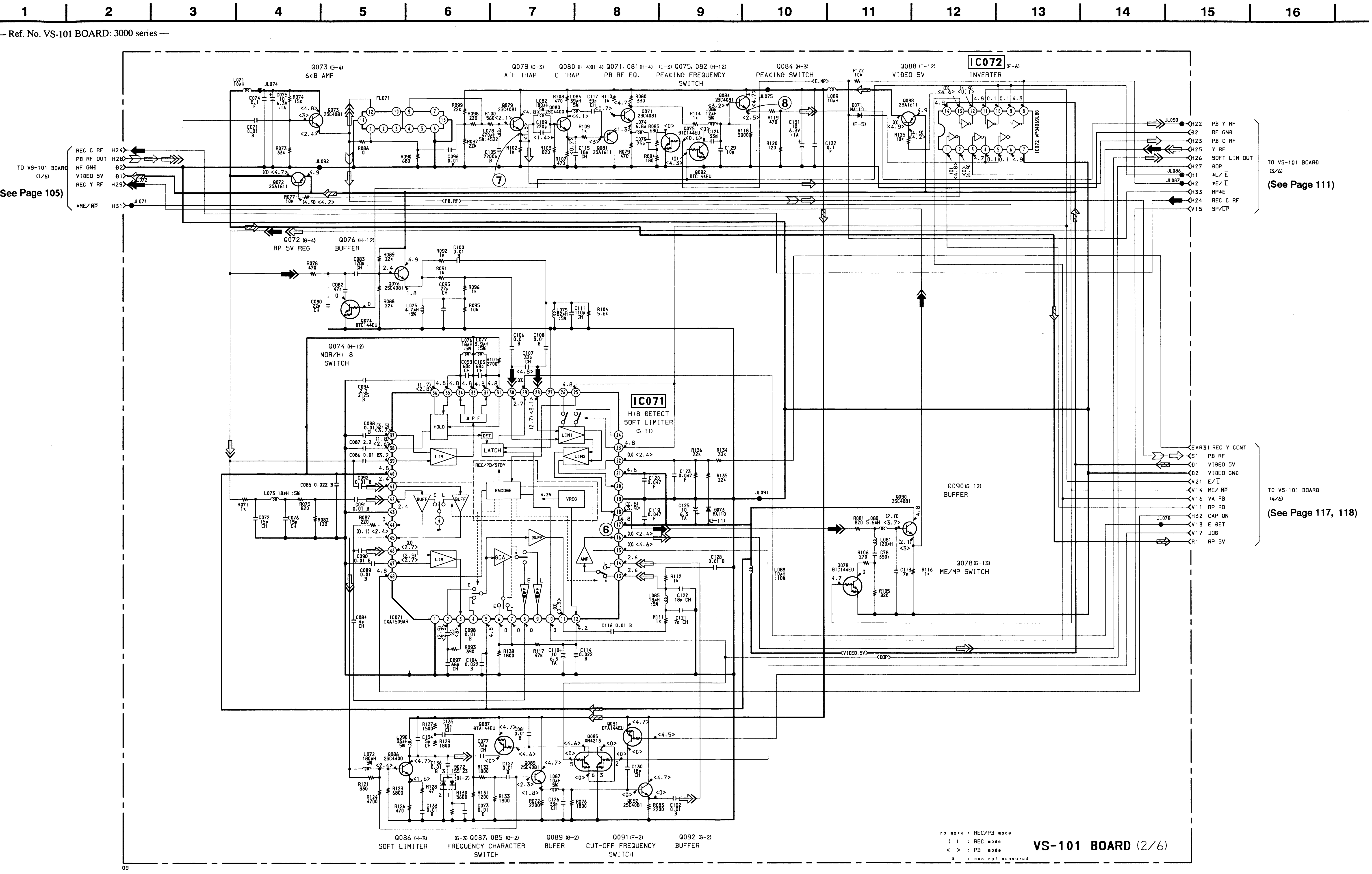
J
TO VS-101 BOARD (1/6)
(See Page 105)
REC C RF H24
PB RF OUT H28
RF GND 02
VIDEO 5V 01
REC Y RF H29
*ME/MP H31
Q073 (G-4) 6dB AMP
Q079 (G-3) ATF TRAP
Q080 (H-4) C TRAP
Q071, 081 (H-4) PB RF EQ.
(I-3) Q075, 082 (H-12) PEAKING FREQUENCY SWITCH
Q084 PEAKING SWITCH
Q072 (G-4) RP 5V REG
Q076 (H-12) BUFFER
Q074 (H-12) NOR/HI 8 SWITCH
IC071 HI8 DETECT SOFT LIMITER (G-11)
IC071 CXA1509AR
HOLD
BPF
DET
LATCH
LIM
LIM1
LIM2
REC/PB/STBY
ENCODE
VREG
BUFF
GCA
AMP
FL071
<PB.RF>
Q086 (H-3) SOFT LIMITER
(G-3) Q087, 085 (G-2) FREQUENCY CHARACTER SWITCH
Q089 (G-2) BUFER
Q091 (F-2) CUT-OFF FREQUENCY SWITCH
Q092 (G-2) BUFFER
09

-101 (VIDEO) SCHEMATIC DIAGRAM

• Refer to page 102 for Printed Wiring Board.

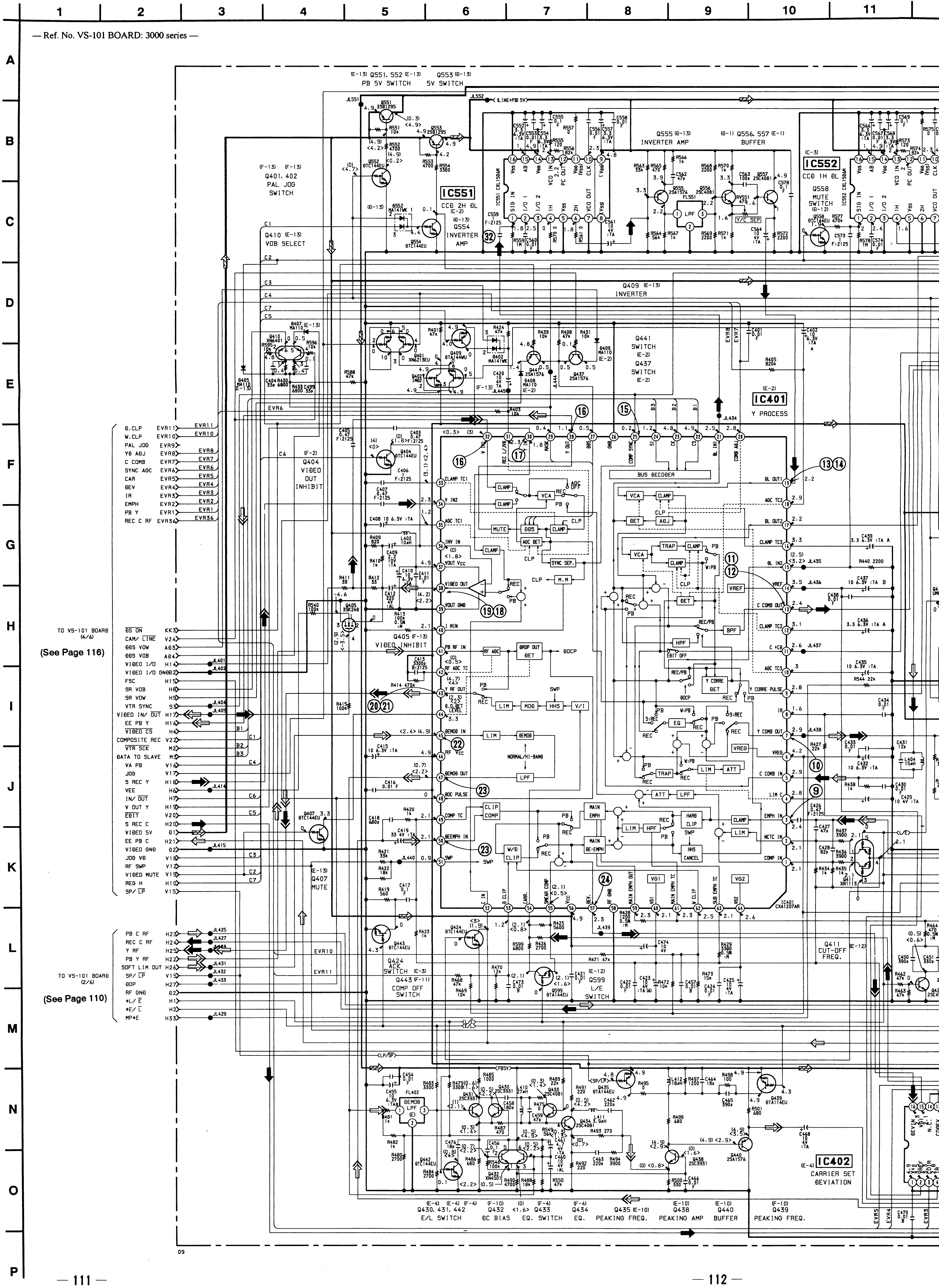
— Ref. No. VS-101 BOARD: 3000 series —



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
Q073 (G-4) 6dB AMP
Q079 (G-3) ATF TRAP
Q080 (H-4) C TRAP
Q071, 081 (H-4) PB RF EQ.
Q075, 082 (H-12) PEAKING FREQUENCY SWITCH
Q084 (H-3) PEAKING SWITCH
Q088 (I-12) VIDEO 5V
IC072 (E-6) INVERTER
Q072 (G-4) RP 5V REG
Q076 (H-12) BUFFER
Q074 (H-12) NOR/HI 8 SWITCH
IC071 HI8 DETECT SOFT LIMITER (G-11)
IC071 CXA1509AR
Q090 (G-12) BUFFER
Q078 (G-13) ME/MP SWITCH
Q086 (H-3) SOFT LIMITER
(G-3) Q087, 085 (G-2) FREQUENCY CHARACTER SWITCH
Q089 (G-2) BUFER
Q091 (F-2) CUT-OFF FREQUENCY SWITCH
Q092 (G-2) BUFFER
TO VS-101 BOARD (1/6)
(See Page 105)
REC C RF H24
PB RF OUT H28
RF GND D2
VIDEO 5V D1
REC Y RF H29
*ME/MP H31
TO VS-101 BOARD (3/6)
(See Page 111)
H22 PB Y RF
D2 RF GND
H23 PB C RF
H25 Y RF
H26 SOFT LIM OUT
H27 DOP
H1 *L/E
H2 *E/L
H33 MP*E
H24 REC C RF
V15 SP/LP
TO VS-101 BOARD (4/6)
(See Page 117, 118)
EVR31 REC Y CONT
S1 PB RF
D1 VIDEO 5V
D2 VIDEO GND
V21 E/L
V14 ME/MP
V16 VA PB
V11 RP PB
H32 CAP ON
V13 E DET
V17 JOG
R1 RP 5V
HOLD
BPF
DET
LATCH
LIM
LIM1
LIM2
REC/PB/STBY
ENCODE
VREG
BUFF
GCA
AMP
<PB.RF>
<VIDEO.5V>
<DOP>
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
* : can not measured
VS-101 BOARD (2/6)
09

• Refer to page 102 for Printed Wiring Board.

— Ref. No. VS-101 BOARD: 3000 series —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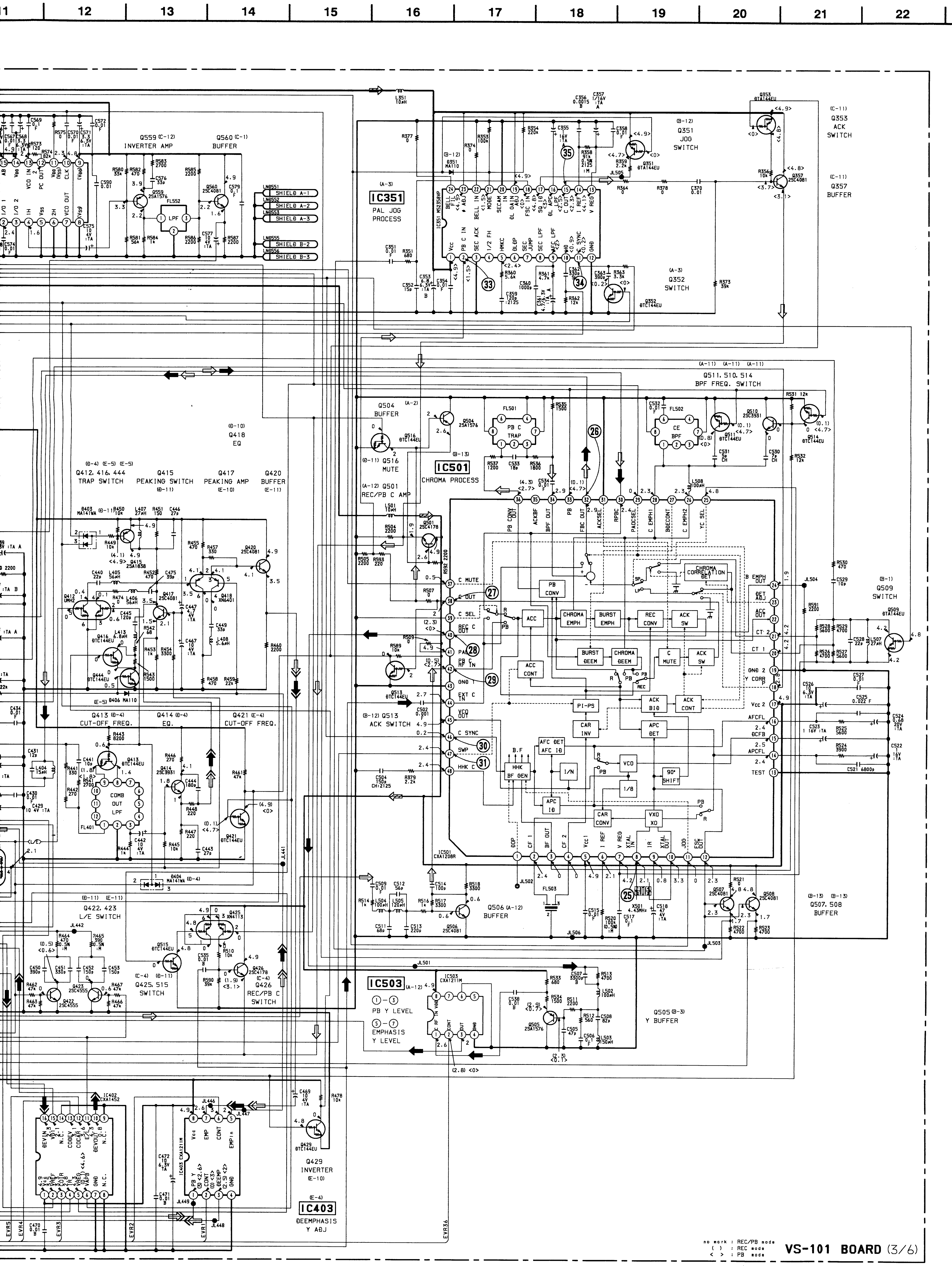
Q551, 552 PB 5V SWITCH
Q553 5V SWITCH
IC551 CCD 2H DL
Q554 INVERTER AMP
Q555 INVERTER AMP
Q556, 557 BUFFER
IC552 CCD 1H DL
Q558 MUTE SWITCH
Q401, 402 PAL JOG SWITCH
Q410 VDB SELECT
Q409 INVERTER
Q441 SWITCH
Q437 SWITCH
IC401 Y PROCESS
IC401 CXA1207AR
Q404 VIDEO OUT INHIBIT
Q405 VIDEO INHIBIT
Q407 MUTE
Q411 CUT-OFF FREQ.
Q424 ACK SWITCH
Q443 COMP OFF SWITCH
Q599 L/E SWITCH
Q430, 431, 442 E/L SWITCH
Q432 DC BIAS
Q433 EQ. SWITCH
Q434 EQ.
Q435 PEAKING FREQ.
Q438 PEAKING AMP
Q440 BUFFER
Q439 PEAKING FREQ.
IC402 CARRIER SET DEVIATION
BUS DECODER
TO VS-101 BOARD (4/6)
(See Page 116)
TO VS-101 BOARD (2/6)
(See Page 110)
D.CLP EVR11
W.CLP EVR10
PAL JOG EVR9
YD ADJ EVR8
C COMB EVR7
SYNC AGC EVR6
CAR EVR5
DEV EVR4
IR EVR3
EMPH EVR2
PB Y EVR1
REC C RF EVR36
DS ON KK3
CAM/ LINE V24
DDS VDW AD3
DDS VDB AD4
VIDEO I/O H14
VIDEO I/O GND D2
FSC H15
SR VDB H8
SR VDW H9
VTR SYNC S3
VIDEO IN/ OUT H17
EE PB Y H16
VIDEO CS H4
COMPOSITE REC V22
VTR SCK M2
DATA TO SLAVE M3
VA PB V16
JOG V17
S REC Y H18
VEE H6
IN/ OUT H7
V OUT Y H19
EDIT V20
S REC C H20
VIDEO 5V D1
EE PB C H21
VIDEO GND D2
JOG VD V18
RF SWP V12
VIDEO MUTE V19
REG H H10
SP/ LP V15
PB C RF H23
REC C RF H24
Y RF H25
PB Y RF H22
SOFT LIM OUT H26
SP/ LP V15
DOP H27
RF GND D2
*L/ E H1
*E/ L H2
MP*E H33
09


11
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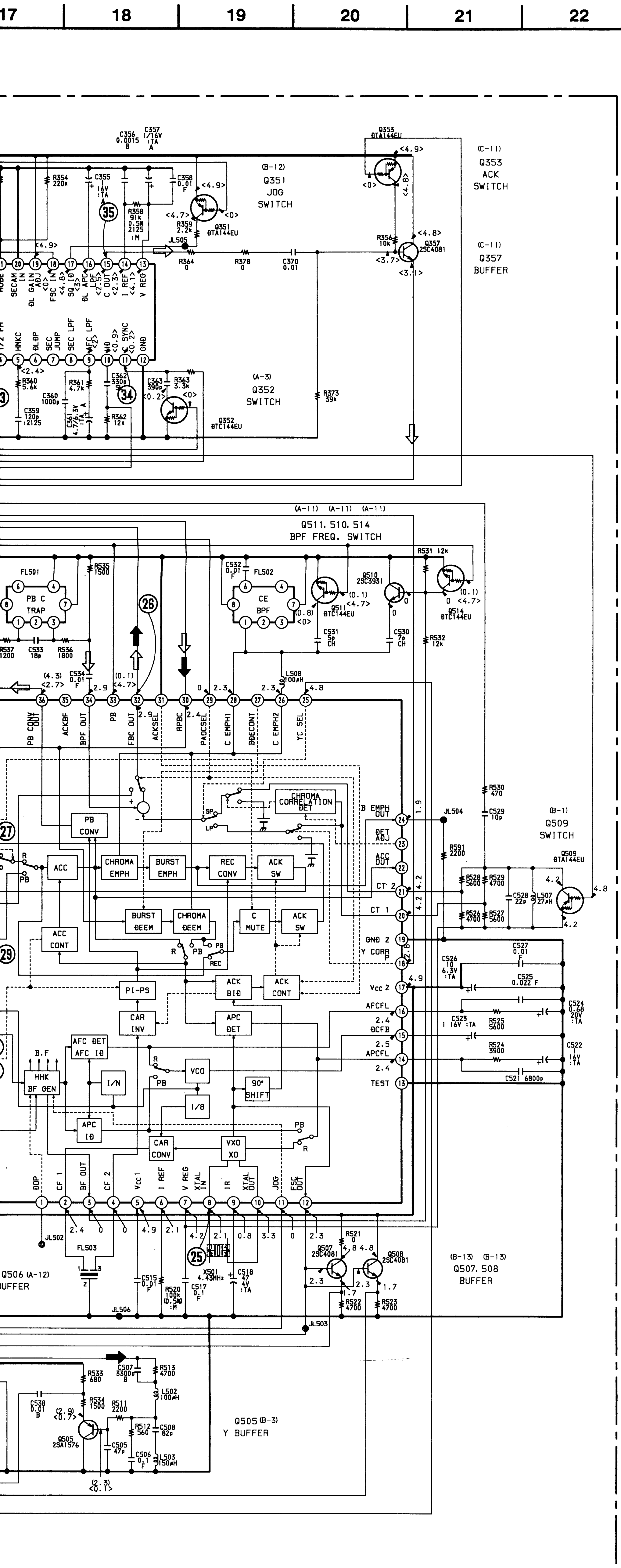
22
IC351 PAL JOG PROCESS
IC351 M52358VP
Q351 JOG SWITCH
Q352 SWITCH
Q353 ACK SWITCH
Q357 BUFFER
Q559 INVERTER AMP
Q560 BUFFER
SHIELD A-1
SHIELD A-2
SHIELD A-3
SHIELD B-2
SHIELD B-3
IC501 CHROMA PROCESS
IC501 CXA1208R
Q504 BUFFER
Q516 MUTE
Q501 REC/PB C AMP
Q513 ACK SWITCH
Q511, 510, 514 BPF FREQ. SWITCH
Q509 SWITCH
Q506 BUFFER
Q507, 508 BUFFER
Q505 Y BUFFER
IC503 CXA1211M
IC503 PB Y LEVEL
EMPHASIS Y LEVEL
Q412, 416, 444 TRAP SWITCH
Q415 PEAKING SWITCH
Q417 PEAKING AMP
Q420 BUFFER
Q418 EQ
Q413 CUT-OFF FREQ.
Q414 EQ.
Q421 CUT-OFF FREQ.
Q422, 423 L/E SWITCH
Q425, 515 SWITCH
Q426 REC/PB C SWITCH
Q429 INVERTER
IC402 CXA1452
IC403 CXA1211M
IC403 DEEMPHASIS Y ADJ
FL501 PB C TRAP
FL502 CE BPF
FL401 COMB OUT LPF
FL552 LPF
ACC
CHROMA EMPH
BURST EMPH
REC CONV
ACK SW
BURST DEEM
CHROMA DEEM
C MUTE
ACC CONT
PB CONV
CHROMA CORRELATION DET
PI-PS
ACK BID
ACK CONT
CAR INV
APC DET
AFC DET
AFC ID
HHK BF GEN
VCO
90° SHIFT
1/N
1/8
APC ID
CAR CONV
VXO XO
X501 4.43MHz

no mark : REC/PB mode
( ) : REC mode
< > : PB mode

VS-101 BOARD (3/6)


17
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24
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26
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28
Q353 ACK SWITCH
Q351 JOG SWITCH
Q357 BUFFER
Q352 SWITCH
Q511, 510, 514 BPF FREQ. SWITCH
FL501 PB C TRAP
FL502 CE BPF
Q509 SWITCH
CHROMA CORRELATION DET
PB CONV
ACC
CHROMA EMPH
BURST EMPH
REC CONV
ACK SW
BURST DEEM
CHROMA DEEM
C MUTE
ACC CONT
PI-PS
ACK BID
ACK CONT
CAR INV
APC DET
AFC DET AFC ID
VCO
1/N
90° SHIFT
1/8
HHK BF GEN
APC ID
CAR CONV
VXO XO
Q507, 508 BUFFER
Q506 BUFFER
Q505 Y BUFFER

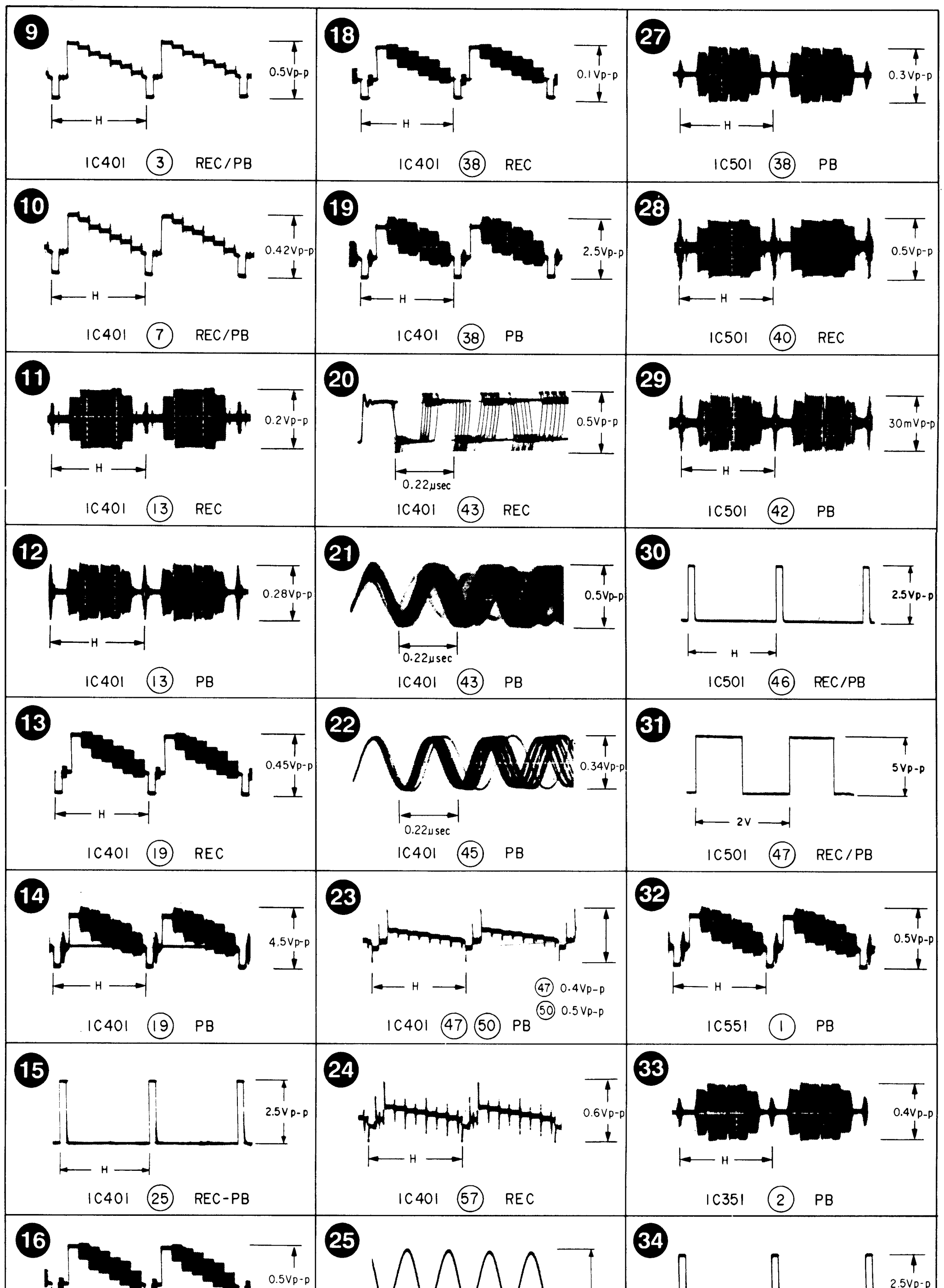
no mark : REC/PB mode
( ) : REC mode
< > : PB mode

VS-101 BOARD (3/6)

- **SIGNAL PATH**

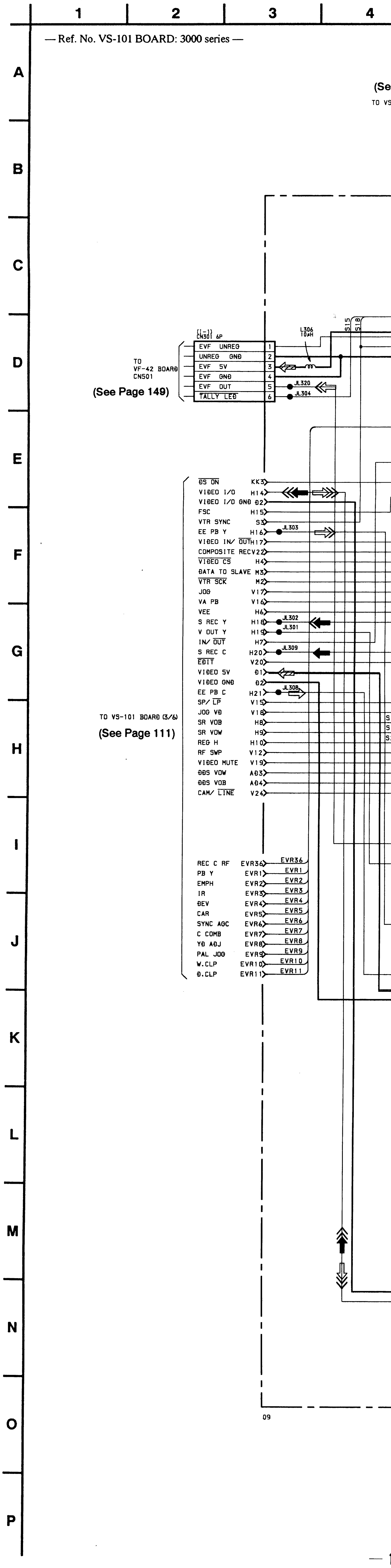
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡➡	➡➡➡
PB	⇨	⇨⇨	

VS-101 BOARD (3/6)



VS-101 (VIDEO) SCHEMATIC DIAGRAM

• Refer to p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D
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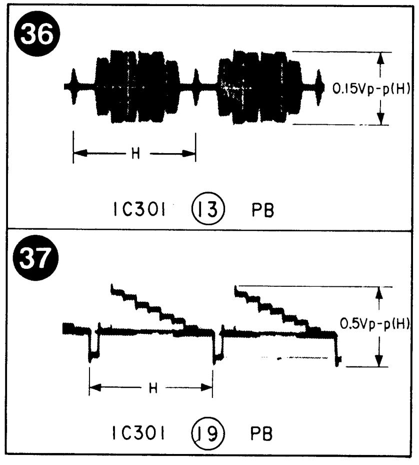
I
J
K
L
M
N
O
P
— Ref. No. VS-101 BOARD: 3000 series —
(Se
TO VS
(1-1)
CN301 6P
EVF UNREG 1
UNREG GND 2
EVF 5V 3
EVF GND 4
EVF OUT 5
TALLY LED 6
L306 10μH
JL320
JL304
TO VF-42 BOARD CN501
(See Page 149)
OS ON KK3
VIDEO I/O H14
VIDEO I/O GND D2
FSC H15
VTR SYNC S3
EE PB Y H16
JL303
VIDEO IN/ OUT H17
COMPOSITE REC V22
VIDEO CS H4
DATA TO SLAVE M3
VTR SCK M2
JOG V17
VA PB V16
VEE H6
S REC Y H18
JL302
V OUT Y H19
JL301
IN/ OUT H7
S REC C H20
JL309
EDIT V20
VIDEO 5V D1
VIDEO GND D2
EE PB C H21
JL308
SP/ LP V15
JOG VD V18
SR VDB H8
SR VDW H9
REG H H10
RF SWP V12
VIDEO MUTE V19
DDS VDW A03
DDS VDB A04
CAM/ LINE V24
TO VS-101 BOARD (3/6)
(See Page 111)
REC C RF EVR36
PB Y EVR1
EMPH EVR2
IR EVR3
DEV EVR4
CAR EVR5
SYNC AGC EVR6
C COMB EVR7
YD ADJ EVR8
PAL JOG EVR9
W.CLP EVR10
D.CLP EVR11
EVR36
EVR1
EVR2
EVR3
EVR4
EVR5
EVR6
EVR7
EVR8
EVR9
EVR10
EVR11
09

VS-101 BOARD (4/6)

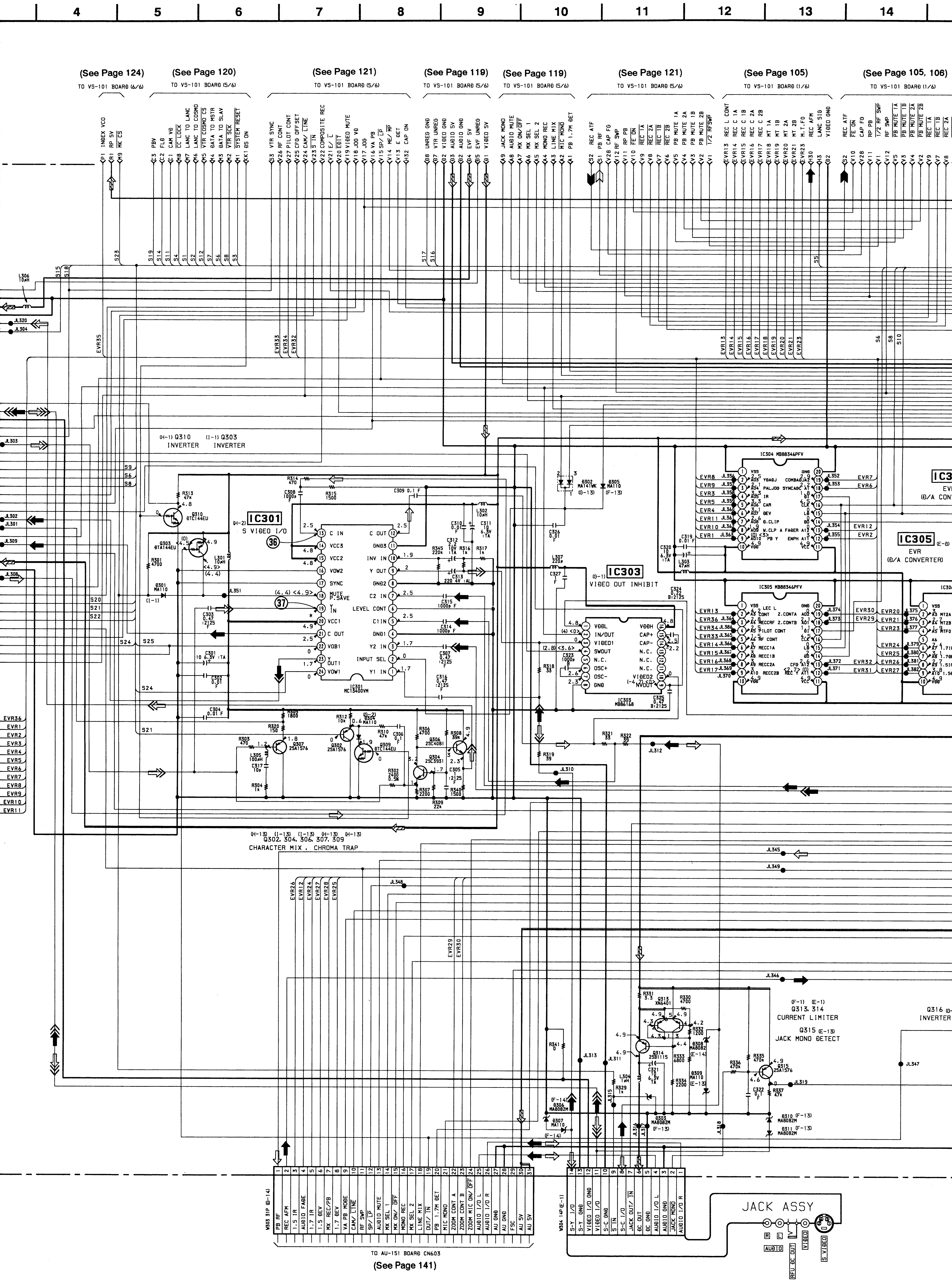


• **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡>	➡>>	➡
PB	⇨	⇨>	⇨>>	⇨

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal	➤		▷

- Refer to page 102 for Printed Wiring Board.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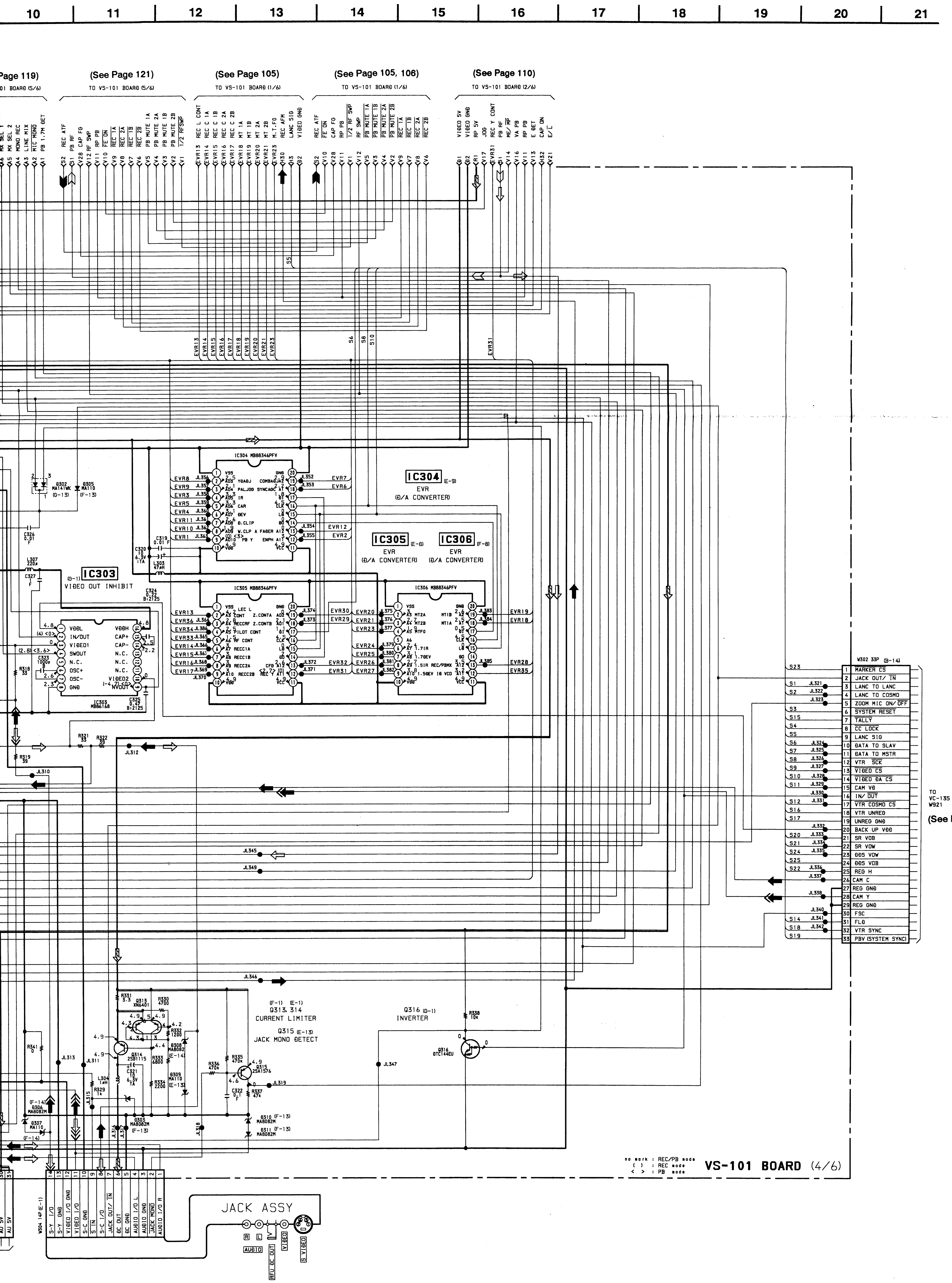
14
(See Page 124)
TO VS-101 BOARD (6/6)
(See Page 120)
TO VS-101 BOARD (5/6)
(See Page 121)
TO VS-101 BOARD (5/6)
(See Page 119)
TO VS-101 BOARD (5/6)
(See Page 119)
TO VS-101 BOARD (5/6)
(See Page 121)
TO VS-101 BOARD (5/6)
(See Page 105)
TO VS-101 BOARD (1/6)
(See Page 105, 106)
TO VS-101 BOARD (1/6)
(H-1) Q310 INVERTER
(I-1) Q303 INVERTER
IC301
S VIDEO I/O
IC301 MC13400VM
IC303
VIDEO OUT INHIBIT
IC303 MB86168
IC304 MB88346PFV
IC305
EVR
(D/A CONVERTER)
IC305 MB88346PFV
(H-13) (I-13) (I-13) (H-13) (H-13)
Q302, 304, 306, 307, 309
CHARACTER MIX , CHROMA TRAP
(F-1) (E-1)
Q313, 314
CURRENT LIMITER
Q315 (E-13)
JACK MONO DETECT
Q316
INVERTER
CN303 31P (G-14)
CN304 14P (E-1)
TO AU-151 BOARD CN603
(See Page 141)
JACK ASSY
R
L
AUDIO
RFU DC OUT
VIDEO
S VIDEO



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(See Page 119)
(See Page 121)
TO VS-101 BOARD (5/6)
(See Page 105)
TO VS-101 BOARD (1/6)
(See Page 105, 106)
TO VS-101 BOARD (1/6)
(See Page 110)
TO VS-101 BOARD (2/6)
REC ATF
PB RF
CAP FG
RF SWP
RP PB
FE ON
REC 1A
REC 2A
REC 1B
REC 2B
PB MUTE 1A
PB MUTE 2A
PB MUTE 1B
PB MUTE 2B
1/2 RFSWP
REC L CONT
REC C 1A
REC C 1B
REC C 2A
REC C 2B
MT 1A
MT 1B
MT 2A
MT 2B
M.T.FO
REC AFM
LANC SIG
VIDEO GND
VIDEO 5V
RP 5V
JOG
REC Y CONT
ME/MP
VA PB
RP PB
E DET
CAP ON
E/L
MONO REC
LINE MIX
MIC MONO
PB 1.7M DET
IC304 MB88346PFV
IC304 (E-9)
EVR
(D/A CONVERTER)
IC305 (E-8)
EVR
(D/A CONVERTER)
IC306 (F-8)
EVR
(D/A CONVERTER)
IC305 MB88346PFV
IC306 MB88346PFV
IC303 (G-1)
VIDEO OUT INHIBIT
IC303 MB86168
VDDL
IN/OUT
VIDEO1
SWOUT
N.C.
OSC+
OSC-
GND
VDDH
CAP+
CAP-
VIDEO2
NVOUT
D302 MA141WK (G-13)
D305 MA110 (F-13)
W302 33P (B-14)
MARKER CS
JACK OUT/ IN
LANC TO LANC
LANC TO COSMO
ZOOM MIC ON/OFF
SYSTEM RESET
TALLY
CC LOCK
LANC SIG
DATA TO SLAV
DATA TO MSTR
VTR SCK
VIDEO CS
VIDEO DA CS
CAM VD
IN/ OUT
VTR COSMO CS
VTR UNREG
UNREG GND
BACK UP VDD
SR VDD
SR VDW
DDS VDW
DDS VDD
REG H
CAM C
REG GND
CAM Y
REG GND
FSC
FLD
VTR SYNC
PBV (SYSTEM SYNC)
TO VC-135 W921
(See
(F-1) (E-1)
Q313, 314
CURRENT LIMITER
Q315 (E-13)
JACK MONO DETECT
Q316 (G-1)
INVERTER
Q313 XN6401
Q314 2SB1115
Q315 2SA1576
Q316 DTC144EU
W304 14P (E-1)
S-Y I/O
S-Y GND
VIDEO I/O GND
VIDEO I/O
S-C GND
S IN
S-C I/O
JACK OUT/ IN
DC OUT
DC GND
AUDIO I/O L
AUDIO GND
JACK MONO
AUDIO I/O R
JACK ASSY
R
L
AUDIO
RFU DC OUT
VIDEO
S VIDEO

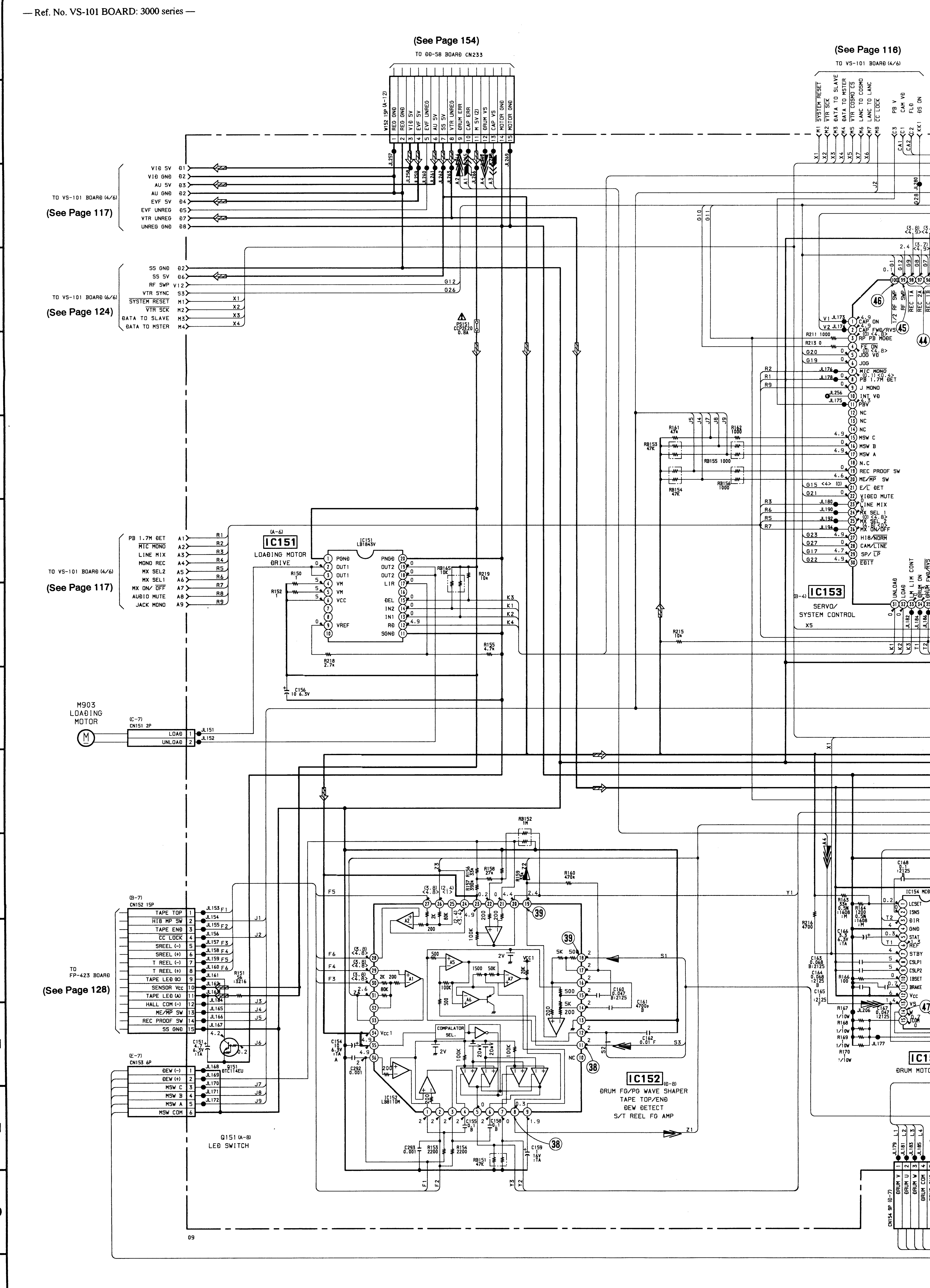
no mark : REC/PB mode
( ) : REC mode
< > : PB mode

VS-101 BOARD (4/6)

VS-101 (SERVO/SYSTEM CONTROL) SCHEMATIC DIAGRAM

• Refer to page 102 for Printed Wiring Board.

— Ref. No. VS-101 BOARD: 3000 series —



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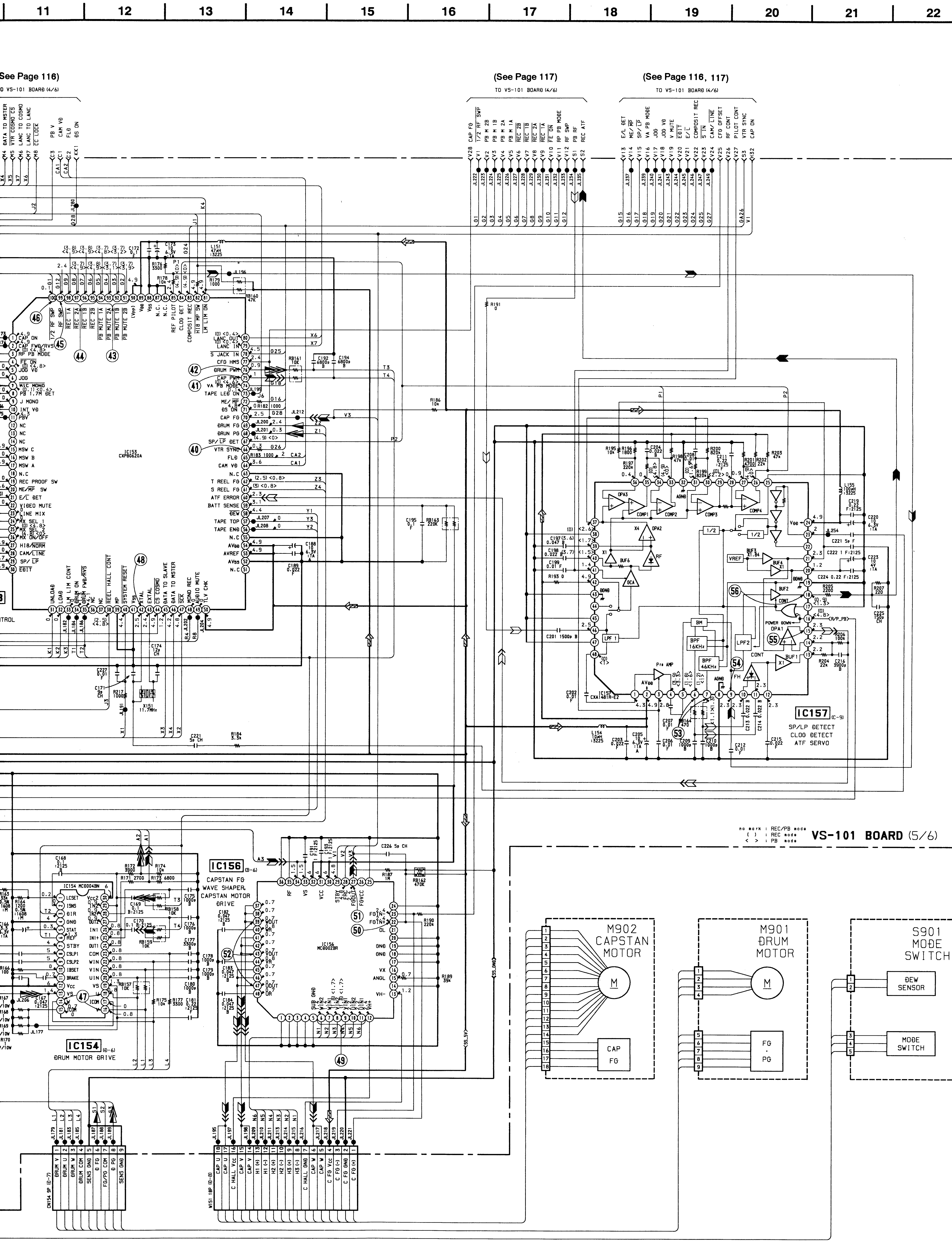
I
J
K
L
M
N
O
P
(See Page 154)
TO DD-58 BOARD CN233
(See Page 116)
TO VS-101 BOARD (4/6)
W152 15P (A-12)
REG GND
VID 5V
EVF 5V
EVF UNREG
AU 5V
SS 5V
VTR UNREG
DRUM ERR
CAP ERR
M 5V (2)
DRUM VS
CAP VS
MOTOR GND
SYSTEM RESET
VTR SCK
DATA TO SLAVE
DATA TO MSTER
VTR COSMO CS
LANC TO COSMO
LANC TO LANC
CC LOCK
PB V
CAM VD
FLD
DS ON
TO VS-101 BOARD (4/6)
(See Page 117)
VID 5V
VID GND
AU 5V
AU GND
EVF 5V
EVF UNREG
VTR UNREG
UNREG GND
TO VS-101 BOARD (6/6)
(See Page 124)
SS GND
SS 5V
RF SWP
VTR SYNC
SYSTEM RESET
VTR SCK
DATA TO SLAVE
DATA TO MSTER
PS151 CCP2E20 0.8A
TO VS-101 BOARD (4/6)
(See Page 117)
PB 1.7M DET
MIC MONO
LINE MIX
MONO REC
MX SEL2
MX SEL1
MX ON/ OFF
AUDIO MUTE
JACK MONO
IC151
LOADING MOTOR DRIVE
IC151 LB1843V
PGND
OUT1
VM
VCC
VREF
PNGD
OUT2
LIR
DEL
IN2
IN1
RD
SGND
RB165 10K
R219 10k
R150
R152
R218 2.7k
R155 4.7k
C156 10 6.3V
M903 LOADING MOTOR
(C-7) CN151 2P
LOAD
UNLOAD
RB153 47K
RB154 47K
RB155 1000
RB156 1000
R161 47k
R162 1000
R215 10k
IC153
SERVO/ SYSTEM CONTROL
CAP ON
CAP FWD/RVS
RP PB MODE
FE ON
JOG VD
JOG
MIC MONO
PB 1.7M DET
J MONO
INT VD
PBV
NC
MSW C
MSW B
MSW A
N.C
REC PROOF SW
ME/MP SW
E/C DET
VIDEO MUTE
LINE MIX
MX SEL 1
MX SEL 2
MX ON/OFF
H18/NORM
CAM/LINE
SP/ LP
EDIT
UNLOAD
LOAD
LM LIM CONT
DRUM ON
DRUM FWD/RVS
(B-7) CN152 15P
TAPE TOP
H18 MP SW
TAPE END
CC LOCK
SREEL (-)
SREEL (+)
T REEL (-)
T REEL (+)
TAPE LED (K)
SENSOR Vcc
TAPE LED (A)
HALL COM (-)
ME/MP SW
REC PROOF SW
SS GND
TO FP-423 BOARD
(See Page 128)
R151 56 :3216
C151 4.7 6.3V :TA
Q151 DTC114EU
(E-7) CN153 6P
DEW (-)
DEW (+)
MSW C
MSW B
MSW A
MSW COM
Q151 (A-8) LED SWITCH
RB152 1M
R156 390k
R157 33k
R158 27k
R159 15k
R160 470k
COMPALATOR SEL.
IC152 LB8110M
C154 10 6.3V :TA
C292 0.001
C293 0.001
R153 2200
R154 2200
C155 0.1
C158 0.1
RB151 47K
C159 1 16V :TA
C160 0.047 B:2125
C161 4700p
C162 0.01 F
IC152
DRUM FG/PG WAVE SHAPER
TAPE TOP/END
DEW DETECT
S/T REEL FG AMP
IC154
LCSET
ISNS
DIR
GND
STAT
REF
STBY
CSLP1
CSLP2
IBSET
BRAKE
Vcc
VS
COM
DRUM MOTO
R163 33k
R164 1200
R216 4700
C163 0.068
C164 0.068
C165
C166 3.3 6.3V :TA
C167 0.047 :2125
C168 0.1 :2125
R166 100
R167 1/10W
R168 1/10W
R169 1/10W
R170 1/10W
CN154 9P (B-7)
DRUM V
DRUM U
DRUM W
DRUM COM
09



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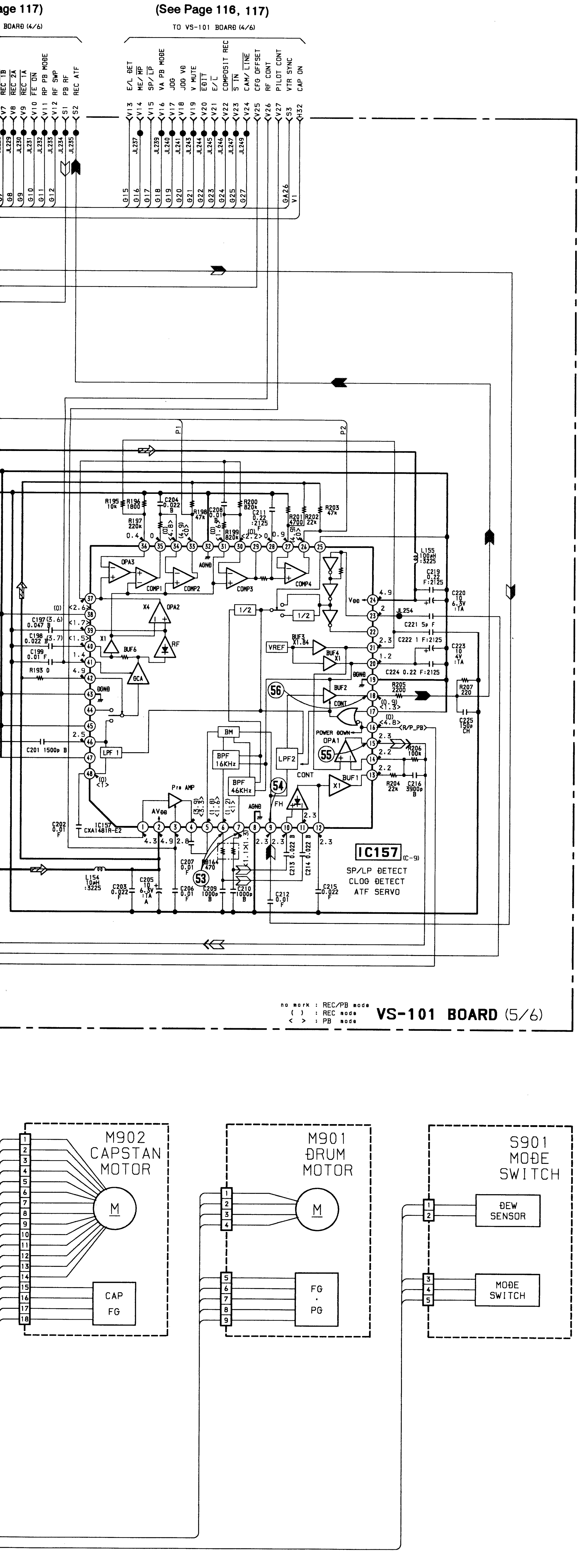
See Page 116)
TO VS-101 BOARD (4/6)
(See Page 117)
TO VS-101 BOARD (4/6)
(See Page 116, 117)
TO VS-101 BOARD (4/6)
IC153
CXP80620A
IC157
CXA1481R-E2
IC157 (C-9)
SP/LP DETECT
CLOG DETECT
ATF SERVO
IC156 (B-6)
CAPSTAN FG
WAVE SHAPER,
CAPSTAN MOTOR
DRIVE
IC156
MC8002BR
IC154 MC8004BN
IC154 (D-6)
DRUM MOTOR DRIVE
M902
CAPSTAN
MOTOR
CAP
FG
M901
DRUM
MOTOR
FG
·
PG
S901
MODE
SWITCH
DEW
SENSOR
MODE
SWITCH
CN154 9P (D-7)
W151 18P (D-8)
X151
11.7MHz
TROL

no mark : REC/PB mode
( ) : REC mode
< > : PB mode

VS-101 BOARD (5/6)

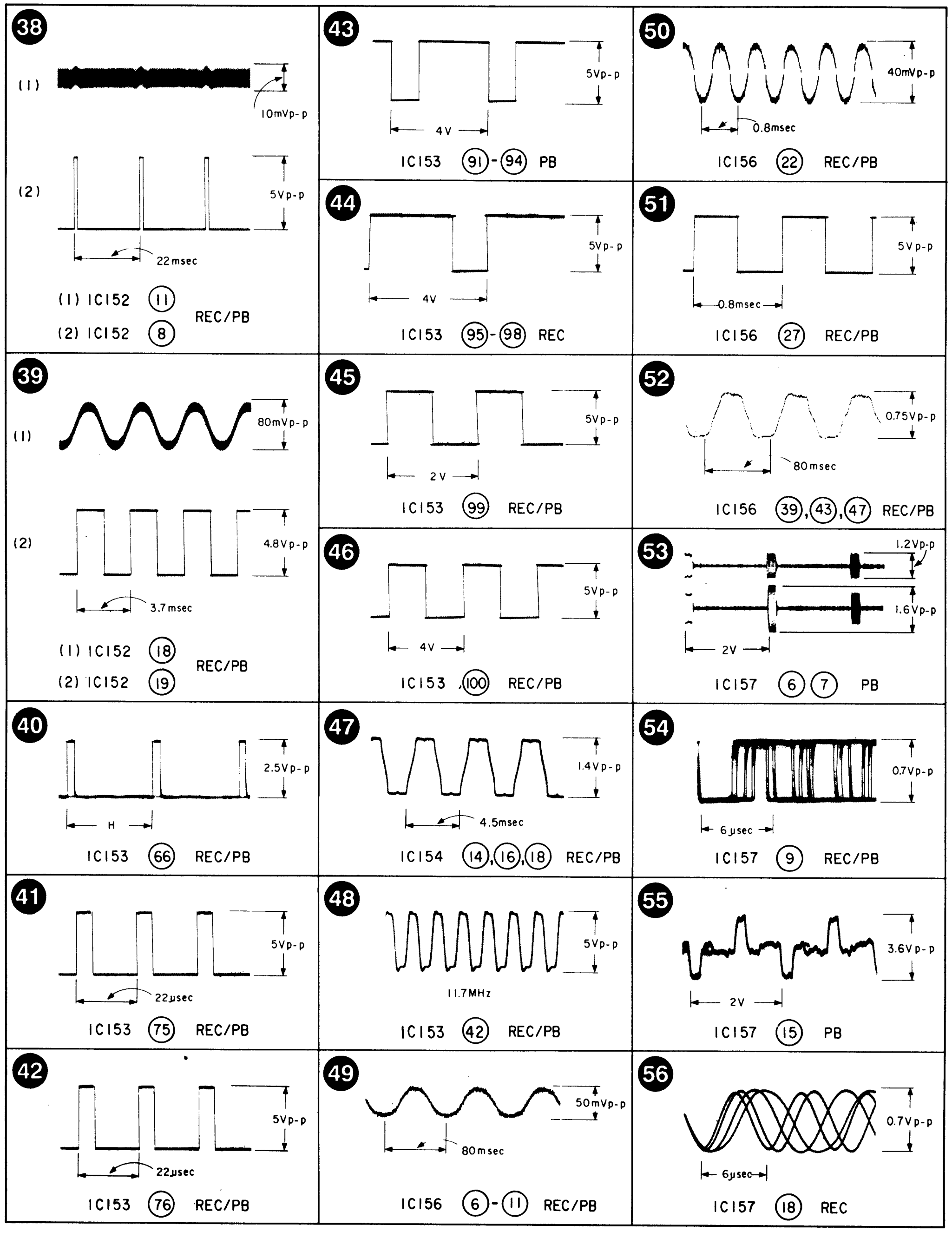

age 117)
BOARD (4/6)
(See Page 116, 117)
TO VS-101 BOARD (4/6)
REC 1B
REC 2A
REC TA
FE ON
RP PB MODE
RF SWP
PB RF
REC ATF
E/L DET
ME/MP
SP/LP
VA PB MODE
JOG VD
JOG VD
V MUTE
EDIT
E/L
COMPOSIT REC
S IN
CAM/LINE
CFG OFFSET
RF CONT
PILOT CONT
VTR SYNC
CAP ON
P1
P2
R195 10k
R196 1800
R197 220k
C204 0.022 B
R198 47k
C208 0.01
R200 820k
C211 0.22 :2125
R199 820k
R201 4700
R202 22k
R203 47k
L155 100µH :3225
C219 0.22 F:2125
C220 10 6.3V :TA
OPA3
COMP1
COMP2
COMP3
COMP4
AGND
X4
OPA2
RF
BUF6
GCA
1/2
1/2
VREF
BUF3 X1.84
BUF4 X1
BUF2
CONT
POWER DOWN
OPA1
BUF1 X1
LPF1
LPF2
BM
BPF 16KHz
BPF 46KHz
Pre AMP
AVDD
VDD
DGND
C197 0.047 B
C198 0.022 B
C199 0.01 F
R193 0
C201 1500p B
C202 0.01 F
IC157 CXA1481R-E2
C207 0.01 F
R164 470
C206 0.01 F
C209 1000p B
C210 1000p B
C212 0.01 F
C213 0.022 B
C214 0.022 B
C215 0.022 F
L154 10mH :3225
C203 0.022 F
C205 10 6.3V :TA A
C221 5p F
C222 1 F:2125
C223 10 4V :TA
C224 0.22 F:2125
R205 2200
R207 220
C225 150p CH
R206 100k
R204 22k
C216 3900p B
L254
(R/P_PB)
IC157 (C-9)
SP/LP DETECT
CLOG DETECT
ATF SERVO
53
54
55
56
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
VS-101 BOARD (5/6)
M902 CAPSTAN MOTOR
M
CAP FG
M901 DRUM MOTOR
M
FG · PG
S901 MODE SWITCH
DEW SENSOR
MODE SWITCH

Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

- **SIGNAL PATH**

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷▷	
Drum servo (speed and phase)		▷▷▷	
Capstan speed servo			
Capstan phase servo	➤»	➤»	▷»
Capstan servo (speed and phase)		➤»»	
Ref. signal	➤	➤	▷

VS-101 BOARD (5/6)

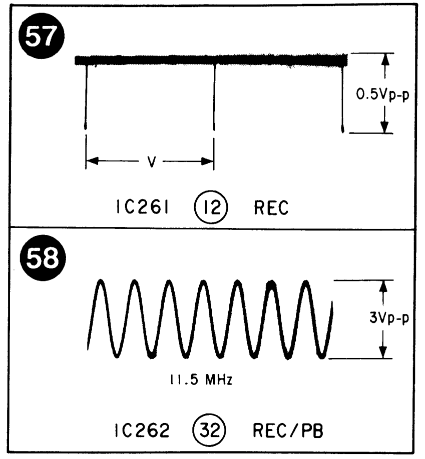


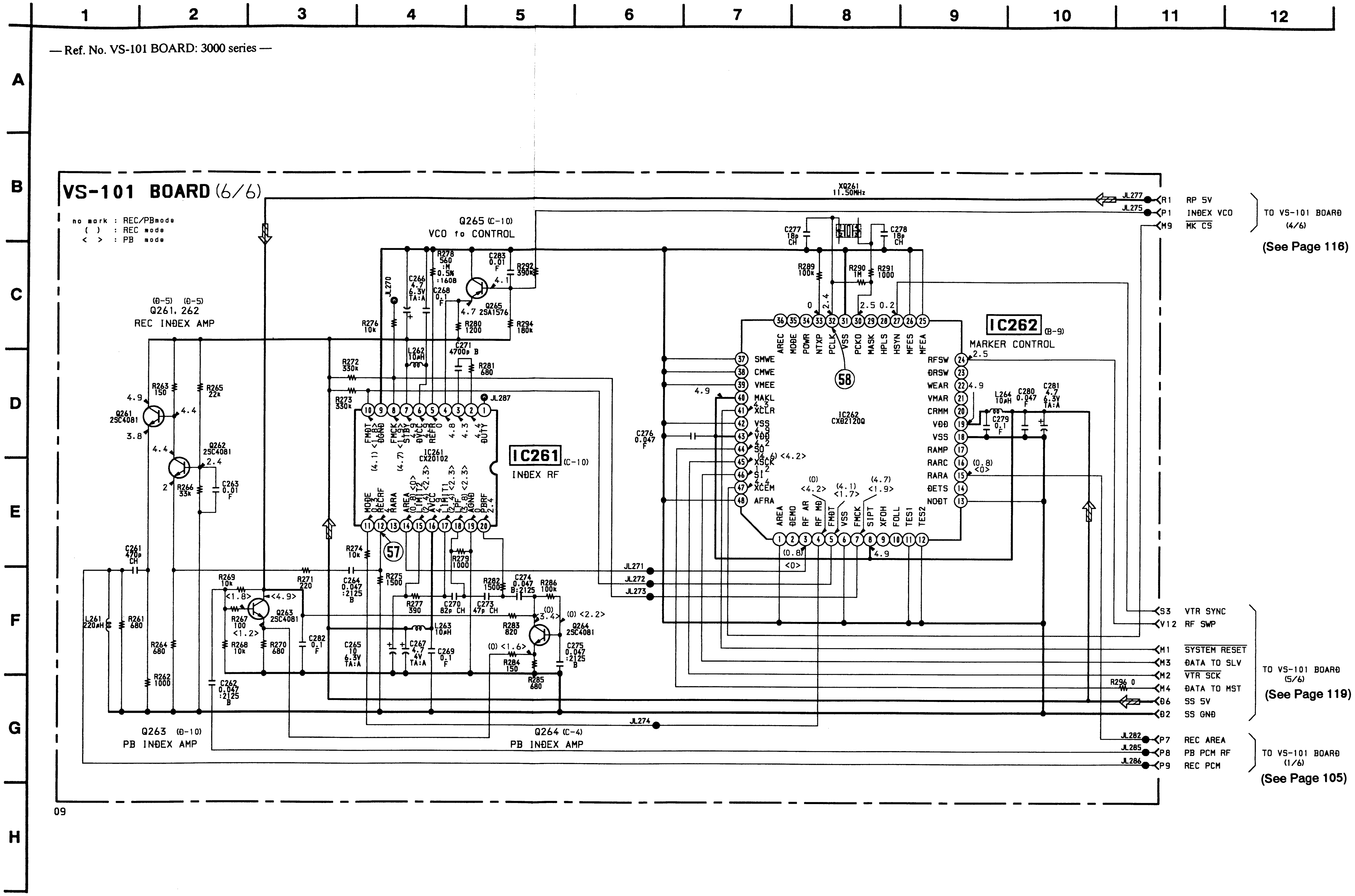
VS-101 (INDEX MARKER) SCHEMATIC DIAGRAM

• Refer to page 102 for Printed Wiring Board.

— Ref. No. VS-101 BOARD: 3000 series —

VS-101 BOARD (6/6)





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VS-101 BOARD (6/6)
no mark : REC/PBmode
( ) : REC mode
< > : PB mode
XQ261 11.50MHz
Q265 (C-10)
VCO to CONTROL
(D-5) (D-5)
Q261, 262
REC INDEX AMP
IC261 CX20102
IC261 (C-10)
INDEX RF
IC262 (B-9)
MARKER CONTROL
IC262 CXQ21200
Q263 (D-10)
PB INDEX AMP
Q264 (C-4)
PB INDEX AMP
Q261 2SC4081
Q262 2SC4081
Q263 2SC4081
Q264 2SC4081
Q265 2SA1576
JL277
JL275
R1 RP 5V
P1 INDEX VCO
M9 MK CS
TO VS-101 BOARD (4/6)
(See Page 116)
S3 VTR SYNC
V12 RF SWP
M1 SYSTEM RESET
M3 DATA TO SLV
M2 VTR SCK
M4 DATA TO MST
D6 SS 5V
D2 SS GND
TO VS-101 BOARD (5/6)
(See Page 119)
JL282
JL285
JL286
P7 REC AREA
P8 PB PCM RF
P9 REC PCM
TO VS-101 BOARD (1/6)
(See Page 105)
JL271
JL272
JL273
JL274
JL287
JL270
R296 0
SMWE
CMWE
VMEE
MAKL
XCLR
VSS
VDD
SO
XSCK
SI
XCEM
AFRA
AREC
MODE
POWR
NTXP
PCLK
VSS
PCKO
MASK
HPLS
HSYN
MFES
MFEA
RFSW
DRSW
WEAR
VMAR
CRMM
VDD
VSS
RAMP
RARC
RARA
DETS
NDDT
AREA
DEMO
RF AR
RF MD
FMDT
VSS
FMCK
SIPT
XFOH
FOLL
TES1
TES2
FMDT
DGND
FMCK
STBY
DVCC
REF
DUTY
MODE
RECRF
RARA
AREA
AVCC
AGND
DBRF
R263 150
R265 22k
R266 33k
C263 0.01 F
R264 680
R262 1000
C261 470p CH
L261 220μH
R261 680
R269 10k
R267 100
R268 10k
R270 680
R271 220
C282 0.1 F
C262 0.047 :2125 B
R272 330k
R273 330k
R274 10k
R275 1500
C264 0.047 :2125 B
C265 10 6.3V TA:A
R277 390
C270 82p CH
C267 4.7 4V TA:A
L263 10μH
C269 0.1 F
R279 1000
R282 1500
C274 0.047 B:2125
R286 100k
C273 47p CH
R283 820
R284 150
R285 680
C275 0.047 :2125 B
R276 10k
R278 560 :M 0.5%
:1608
C266 4.7 6.3V TA:A
C268 0.1 F
C283 0.01 F
R292 390k
R280 1200
R294 180k
L262 10μH
C271 4700p B
R281 680
C277 18p CH
C278 18p CH
R289 100k
R290 1M
R291 1000
C276 0.047 F
L264 10μH
C280 0.047 F
C281 4.7 6.3V TA:A
C279 0.1 F
57
58
09

-101 BOARD
(4/6)
Page 116)

-101 BOARD
(5/6)
Page 119)

-101 BOARD
(1/6)
Page 105)

FP-423 (TAPE SENSOR, SWITCH) PRINTED WIRING BOARD

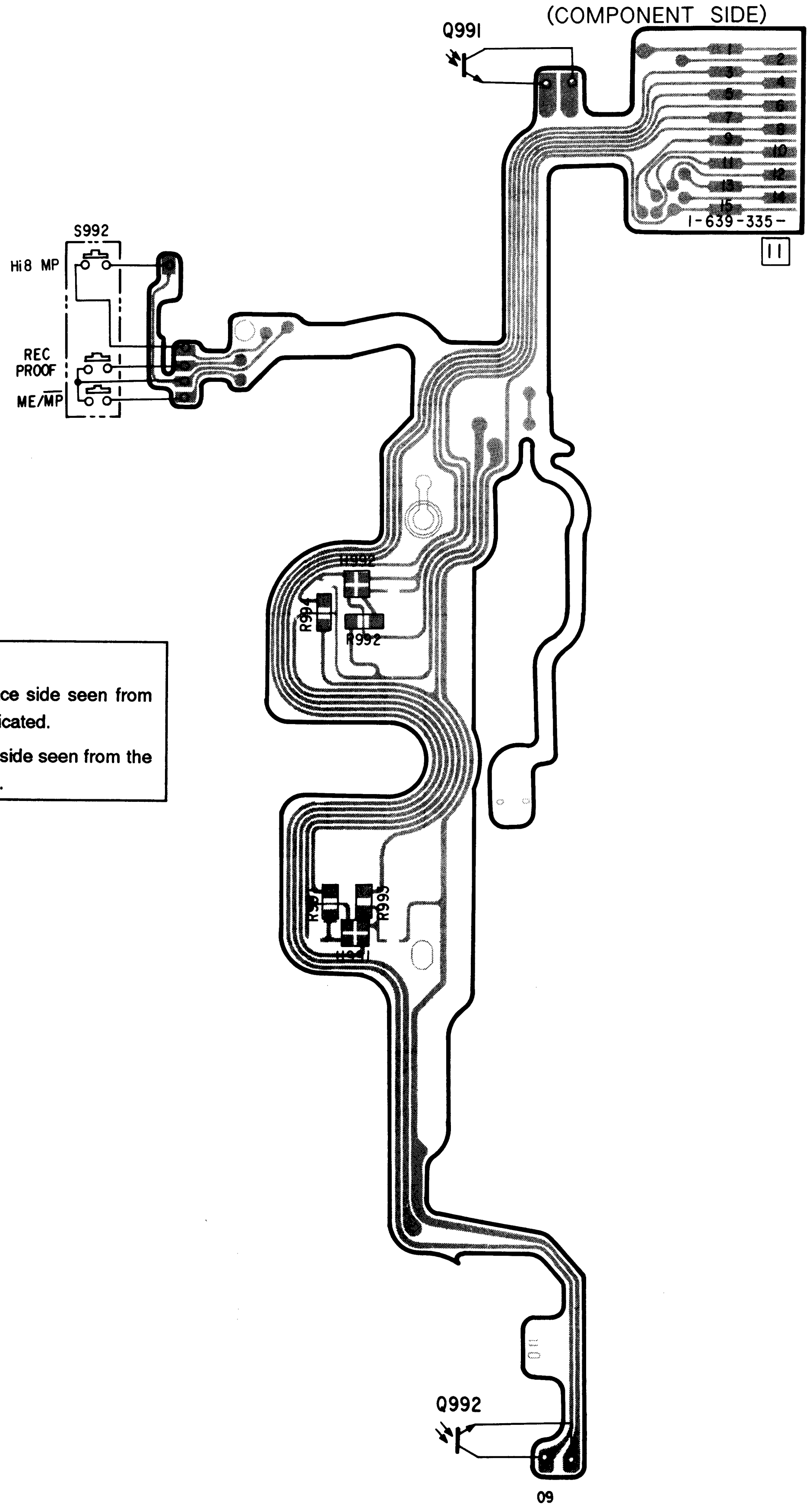
— Ref. No. FP-423 BOARD: 4000 series —

- **For printed wiring boards.**
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

FP-423 FLEXIBLE BOARD

(COMPONENT SIDE)


Q991
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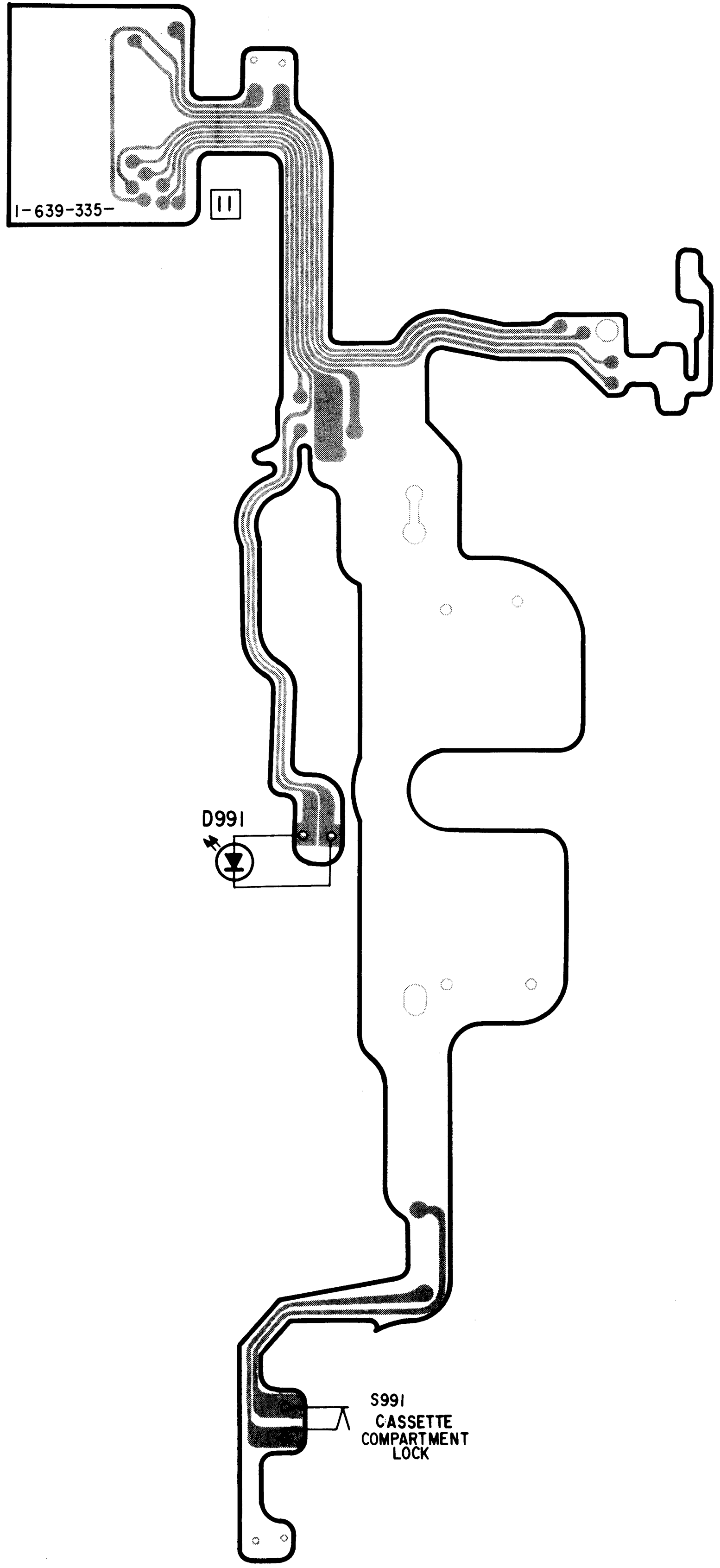
1-639-335-
11
S992
Hi8 MP
REC PROOF
ME/MP
H992
R994
R992
R991
R993
H991
Q992
09

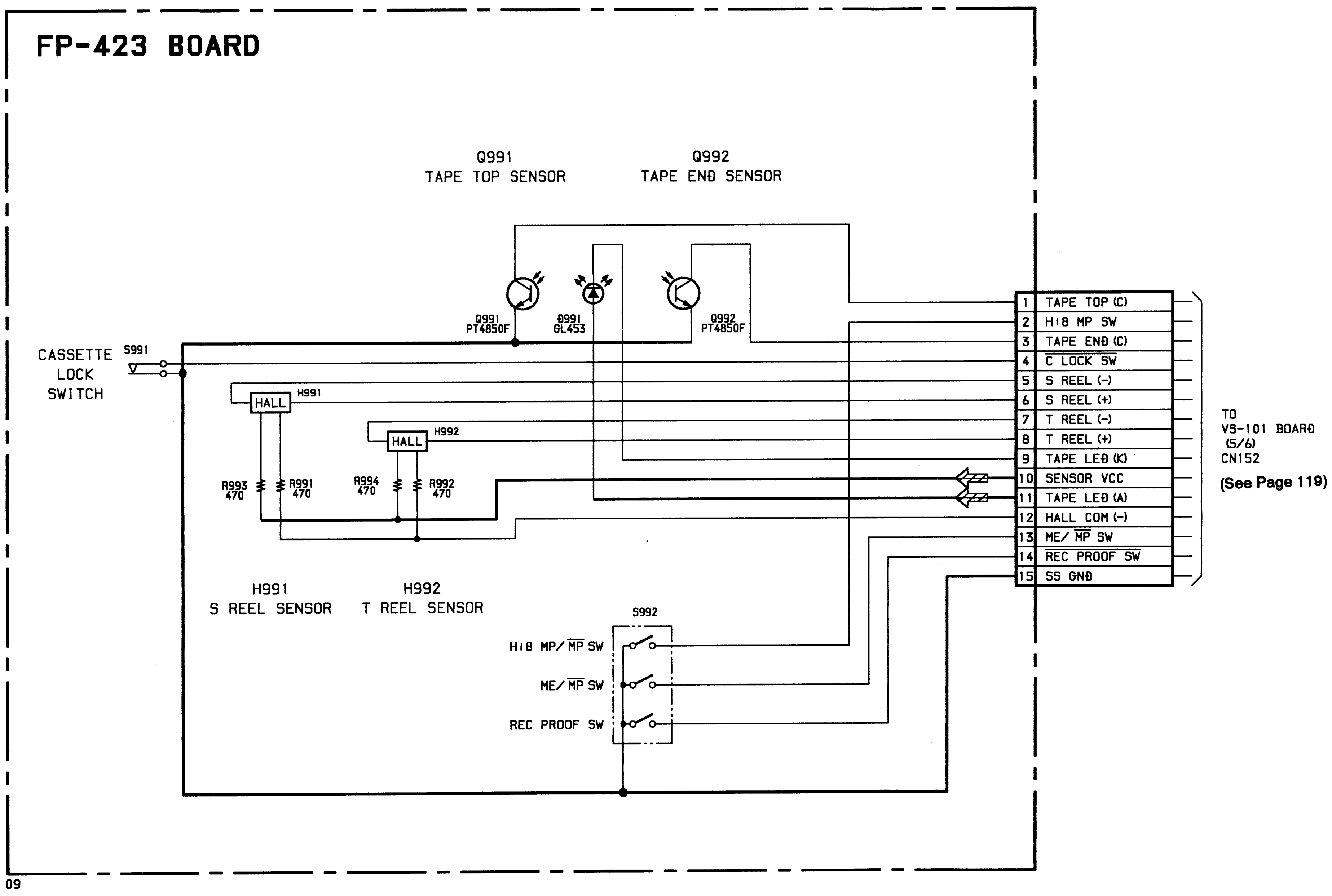
FP-423 FLEXIBLE BOARD

(CONDUCTOR SIDE)


1-639-335-
11
D991
S991
CASSETTE
COMPARTMENT
LOCK

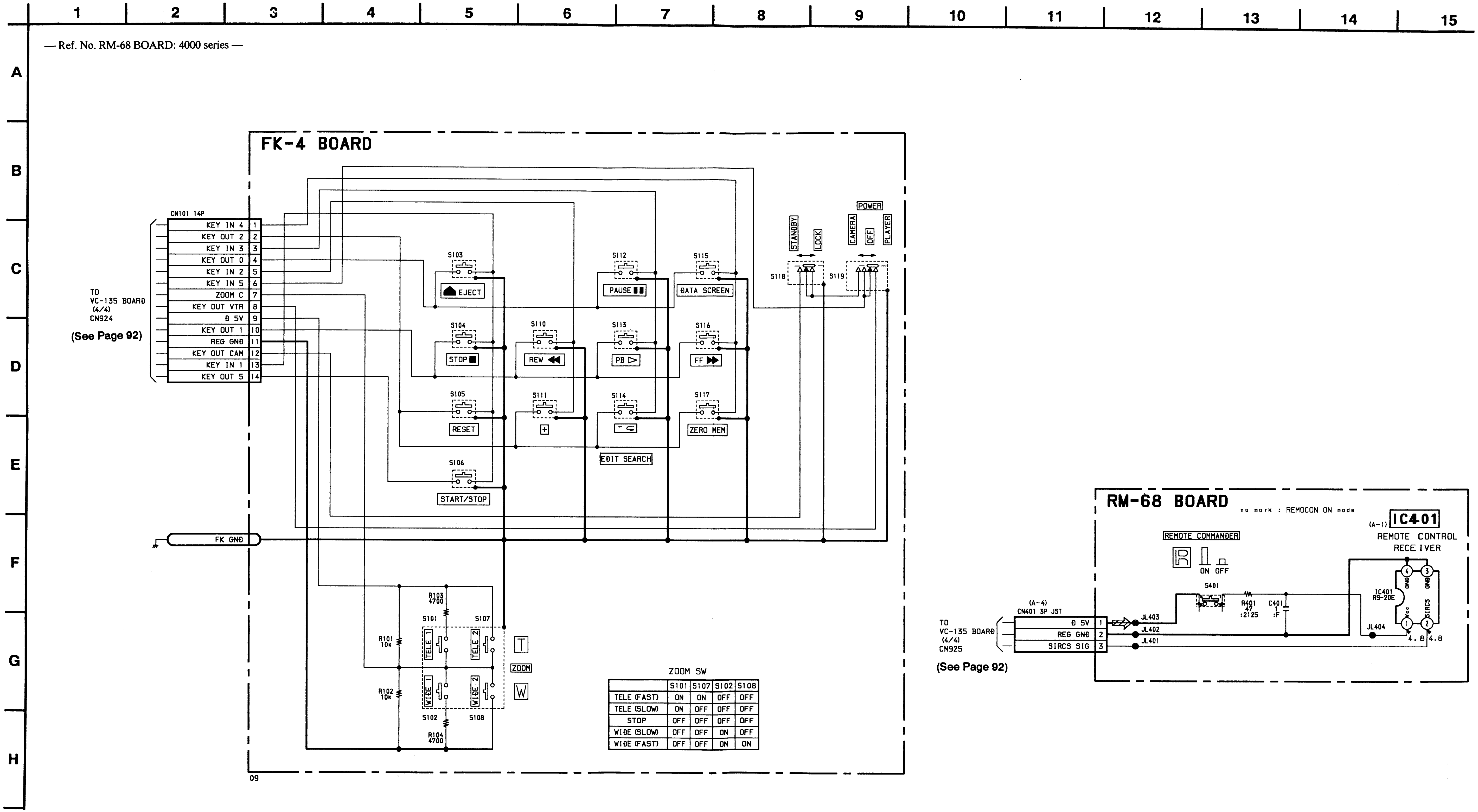
FP-423 (TAPE SENSOR, SWITCH) SCHEMATIC DIAGRAM

— Ref. No. FP-423 BOARD: 4000 series —


FP-423 BOARD
Q991
TAPE TOP SENSOR
Q992
TAPE END SENSOR
Q991
PT4850F
D991
GL453
Q992
PT4850F
CASSETTE LOCK SWITCH
S991
HALL
H991
HALL
H992
R993
470
R991
470
R994
470
R992
470
H991
S REEL SENSOR
H992
T REEL SENSOR
S992
HI8 MP/MP SW
ME/MP SW
REC PROOF SW
1 TAPE TOP (C)
2 HI8 MP SW
3 TAPE END (C)
4 C LOCK SW
5 S REEL (-)
6 S REEL (+)
7 T REEL (-)
8 T REEL (+)
9 TAPE LED (K)
10 SENSOR VCC
11 TAPE LED (A)
12 HALL COM (-)
13 ME/MP SW
14 REC PROOF SW
15 SS GND
TO
VS-101 BOARD
(5/6)
CN152
(See Page 119)
09

RM-68 (REMOTE CONTROL RECEIVER), FK-4 (VIDEO FUNCTION SWITCH) SCHEMATIC DIAGRAMS

— Ref. No. RM-68 BOARD: 4000 series —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A
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C
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G
H
FK-4 BOARD
CN101 14P
KEY IN 4 1
KEY OUT 2 2
KEY IN 3 3
KEY OUT 0 4
KEY IN 2 5
KEY IN 5 6
ZOOM C 7
KEY OUT VTR 8
Ð 5V 9
KEY OUT 1 10
REG GNÐ 11
KEY OUT CAM 12
KEY IN 1 13
KEY OUT 5 14
TO
VC-135 BOARÐ
(4/4)
CN924
(See Page 92)
FK GNÐ
S103
EJECT
S104
STOP
S105
RESET
S106
START/STOP
S110
REW
S111
+
S112
PAUSE
S113
PB
S114
EÐIT SEARCH
S115
ÐATA SCREEN
S116
FF
S117
ZERO MEM
STANÐBY
LOCK
S118
POWER
CAMERA
OFF
PLAYER
S119
R103
4700
S101
S107
R101
10k
TELE 1
TELE 2
T
ZOOM
W
R102
10k
WIÐE 1
WIÐE 2
S102
S108
R104
4700
09
RM-68 BOARD
no mark : REMOCON ON mode
(A-1) IC401
REMOTE CONTROL RECEIVER
REMOTE COMMANÐER
R
ON OFF
S401
R401
47
:2125
C401
1
:F
IC401
RS-20E
GNÐ
GNÐ
Vcc
SIRCS
4
3
1
2
4.8
4.8
JL404
(A-4)
CN401 3P JST
Ð 5V 1
REG GNÐ 2
SIRCS SIG 3
JL403
JL402
JL401
TO
VC-135 BOARÐ
(4/4)
CN925
(See Page 92)

ZOOM SW

	S101	S107	S102	S108
TELE (FAST)	ON	ON	OFF	OFF
TELE (SLOW)	ON	OFF	OFF	OFF
STOP	OFF	OFF	OFF	OFF
WIÐE (SLOW)	OFF	OFF	ON	OFF
WIÐE (FAST)	OFF	OFF	ON	ON

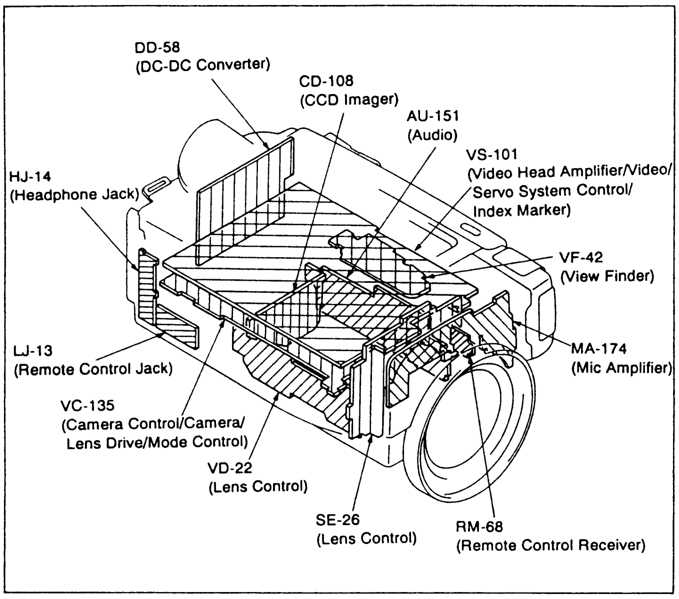
RM-68 (REMOTE CONTROL RECEIVER) PRINTED WIRING BOARD

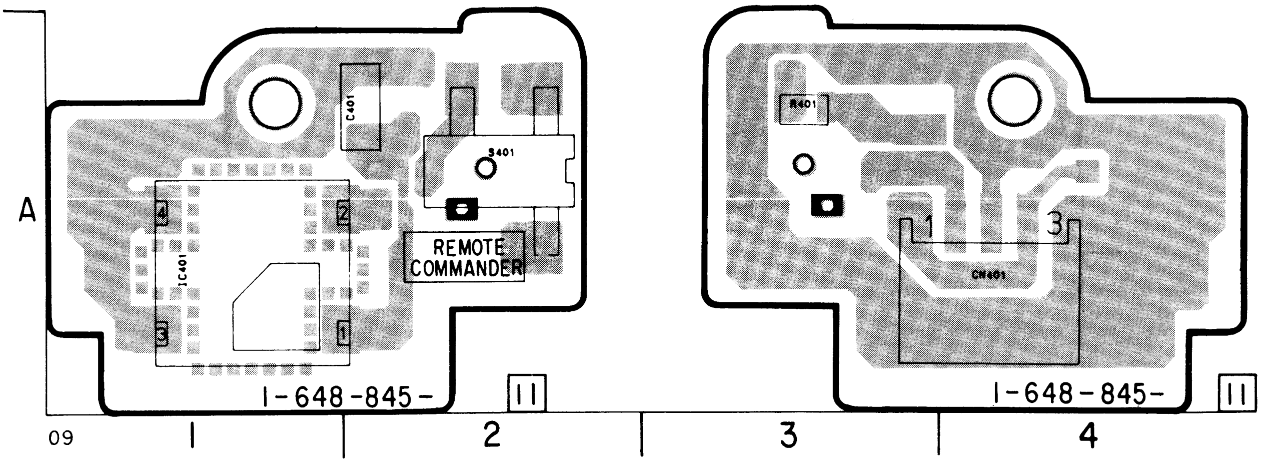
— Ref. No. RM-68 BOARD: 4000 series —

- FK-4 board is replaced as blocks, so that there PRINTED WIRING BOARDS are omitted.

- **For printed wiring boards.**
- RM-68 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.


DD-58
(DC-DC Converter)
CD-108
(CCD Imager)
AU-151
(Audio)
VS-101
(Video Head Amplifier/Video/Servo System Control/Index Marker)
HJ-14
(Headphone Jack)
VF-42
(View Finder)
LJ-13
(Remote Control Jack)
MA-174
(Mic Amplifier)
VC-135
(Camera Control/Camera/Lens Drive/Mode Control)
VD-22
(Lens Control)
SE-26
(Lens Control)
RM-68
(Remote Control Receiver)

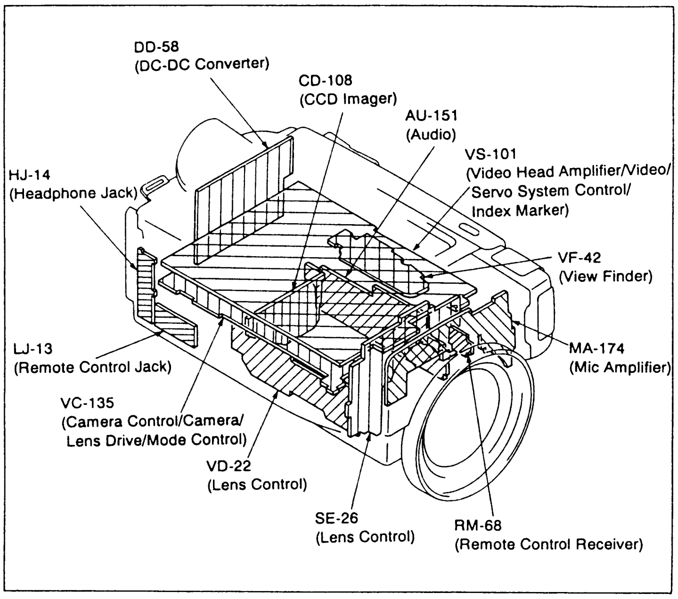

RM-68 BOARD(COMPONENT SIDE) **RM-68** BOARD(CONDUCTOR SIDE)

A
C401
S401
IC401
4
2
3
1
REMOTE
COMMANDER
1-648-845- 11
R401
1
3
CN401
1-648-845- 11
09
1
2
3
4

LJ-13 (REMOTE CONTROL JACK) PRINTED WIRING BOARD

— Ref. No. LJ-13 BOARD: 5000 series —

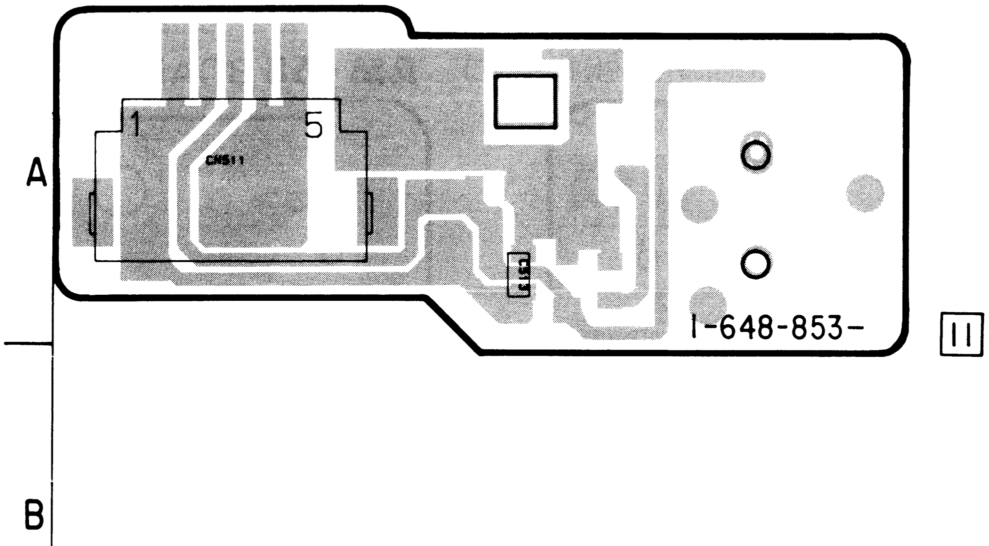
- CF-4 board is replaced as blocks, so that there PRINTED WIRING BOARDS are omitted.


DD-58
(DC-DC Converter)
CD-108
(CCD Imager)
AU-151
(Audio)
VS-101
(Video Head Amplifier/Video/Servo System Control/Index Marker)
HJ-14
(Headphone Jack)
VF-42
(View Finder)
LJ-13
(Remote Control Jack)
MA-174
(Mic Amplifier)
VC-135
(Camera Control/Camera/Lens Drive/Mode Control)
VD-22
(Lens Control)
SE-26
(Lens Control)
RM-68
(Remote Control Receiver)

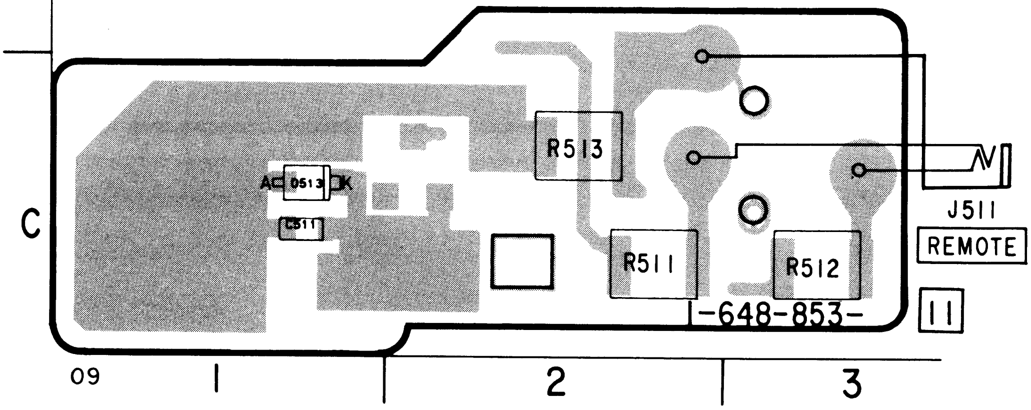
- **For printed wiring boards.**
- LJ-13 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

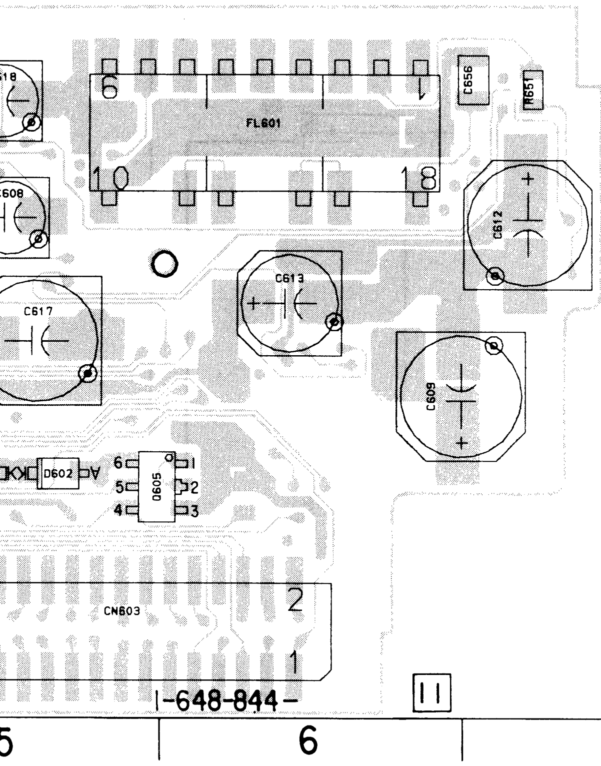
Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

LJ-13 BOARD (COMPONENT SIDE)

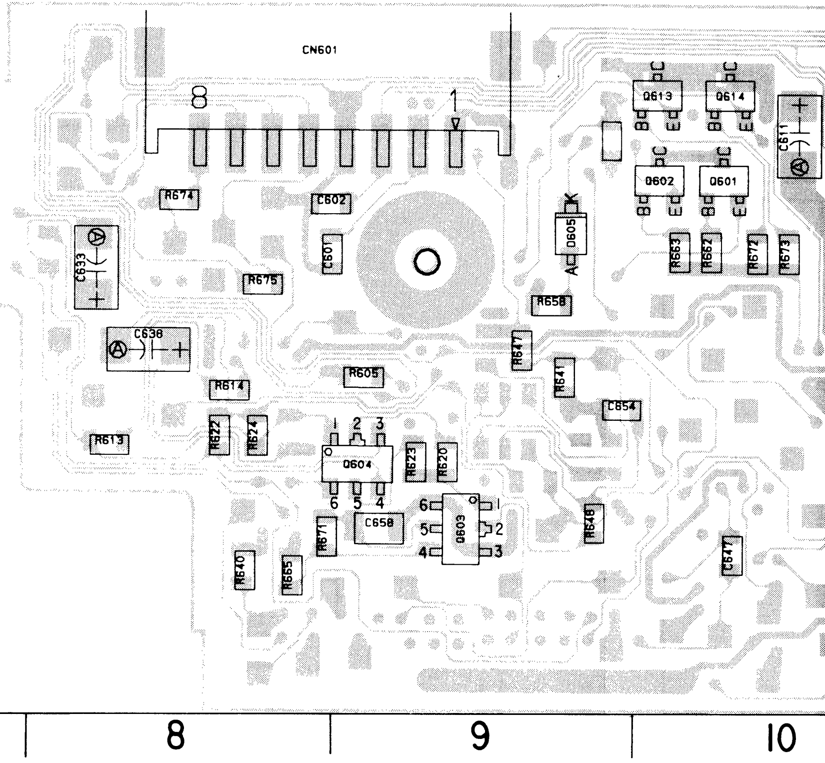

A
1
5
CN511
C513
1-648-853-
11
B

LJ-13 BOARD (CONDUCTOR SIDE)

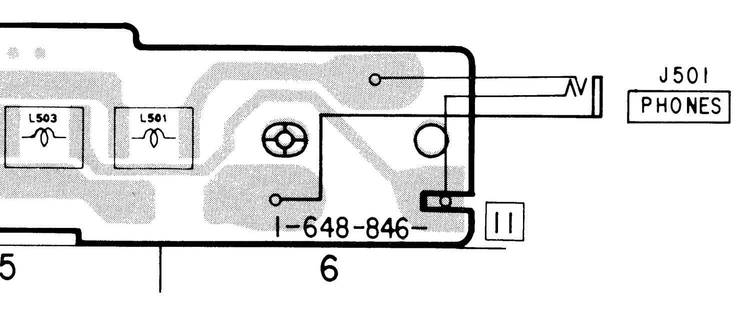

C
R513
AD513K
C511
R511
R512
J511
REMOTE
1-648-853-
11
09
1
2
3

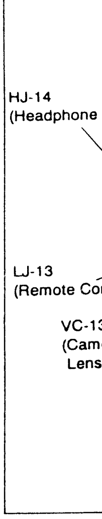

FL601
C656
R651
C612
C613
C617
C609
D602
Q605
CN603
1-648-844-
11
5
6
7

AU-151 BOARD (CONDUCTOR SIDE)

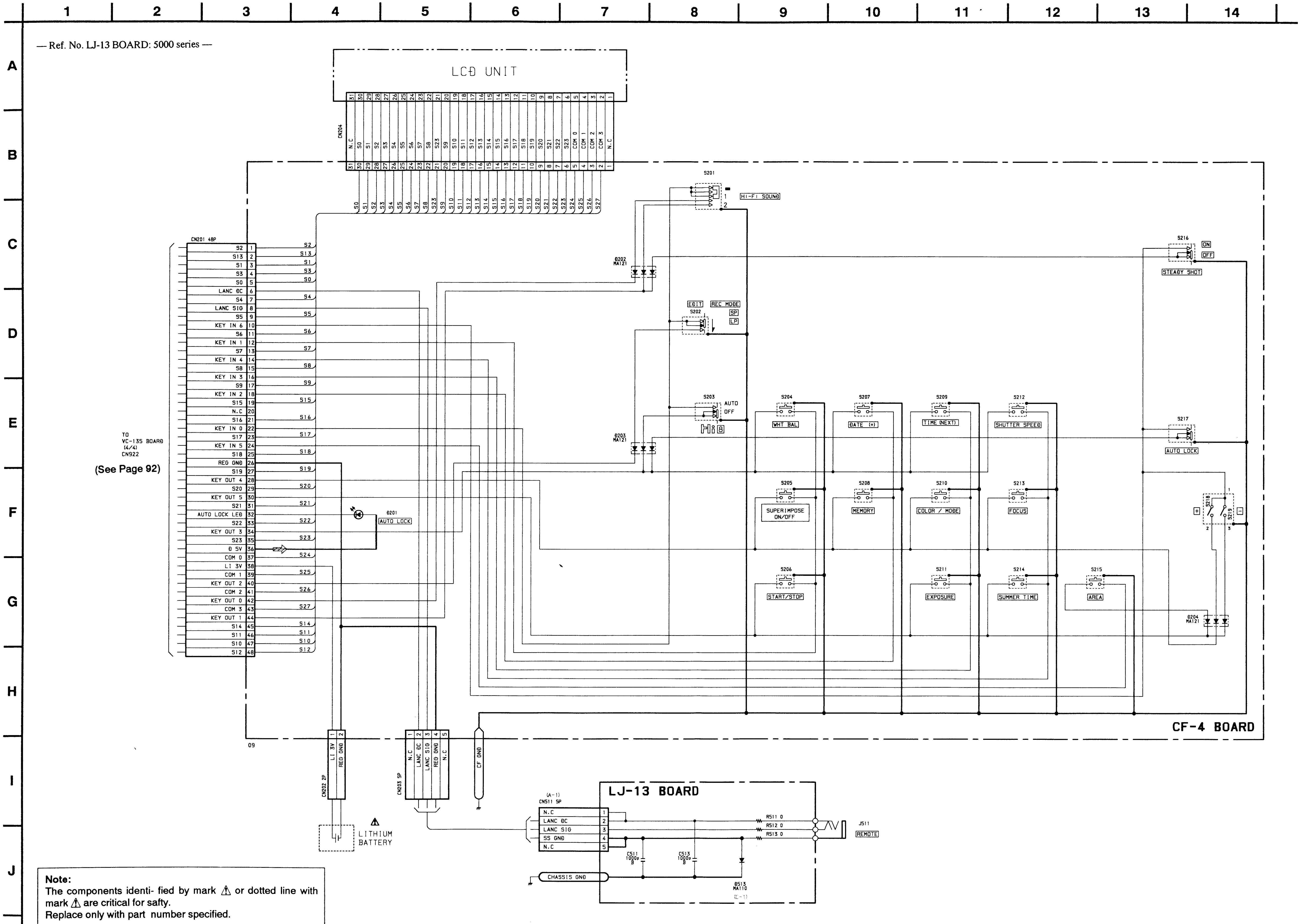

CN601
Q613
Q614
C611
Q602
Q601
R674
C602
D605
C633
C601
R675
R663
R662
R672
R673
R658
C638
R647
R605
R614
R641
C654
R613
R622
R624
Q604
R623
R620
Q603
C658
R671
R648
R640
R665
C647
8
9
10

UCTOR SIDE)

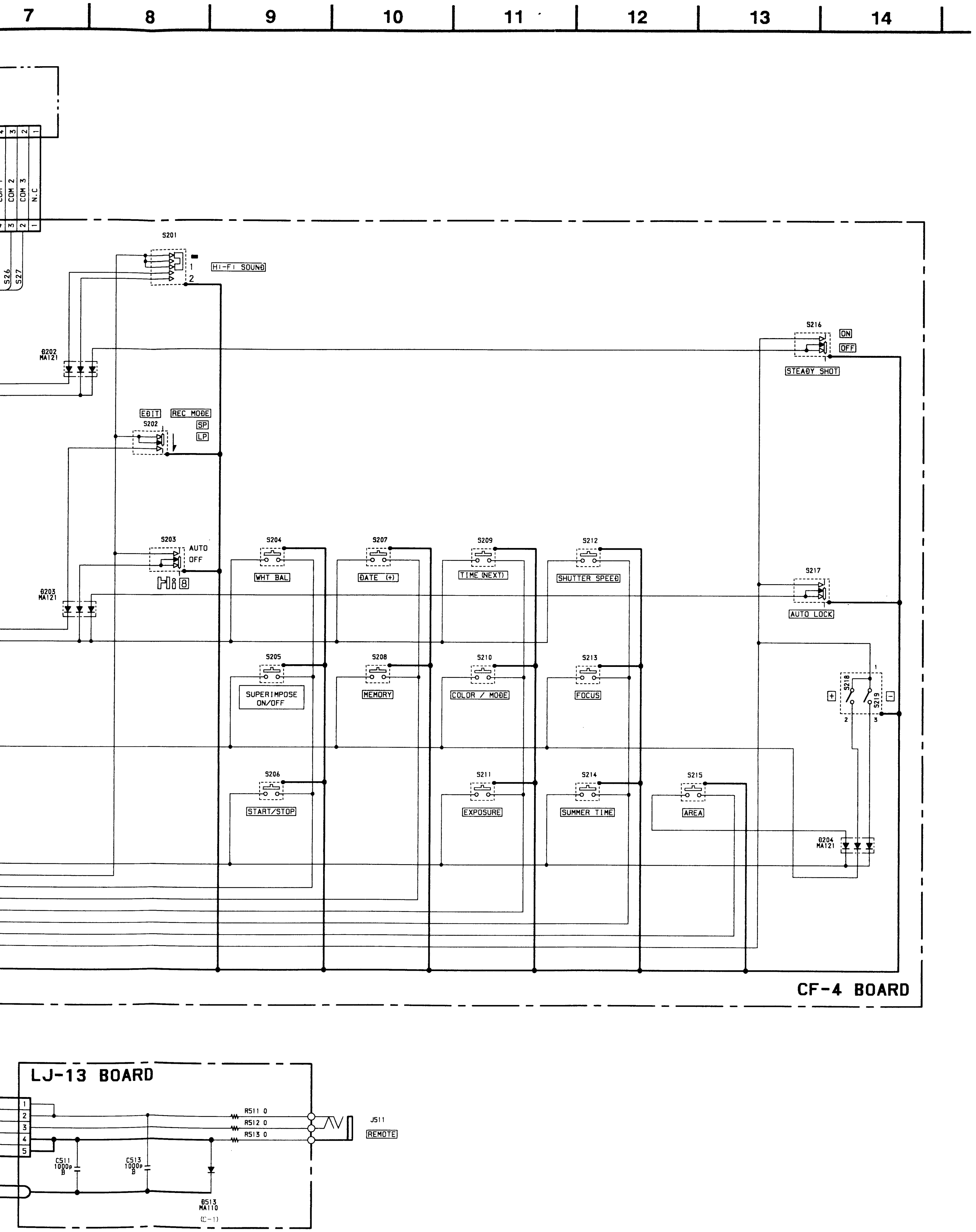

L503
L501
J501
PHONES
1-648-846-
11
5
6


HJ-14
(Headphone
LJ-13
(Remote Co
VC-13
(Came
Lens

LJ-13 (REMOTE CONTROL JACK), CF-4 (CAMERA FUNCTION SWITCH) SCHEMATIC DIAGRAMS


1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
H
I
J
— Ref. No. LJ-13 BOARD: 5000 series —
LCD UNIT
CN204
N.C
S0
S1
S2
S3
S4
S5
S6
S7
S8
S23
S9
S10
S11
S12
S13
S14
S15
S16
S17
S18
S19
S20
S21
S22
S23
S24
S25
S26
S27
COM 0
COM 1
COM 2
COM 3
CN201 48P
S2
S13
S1
S3
S0
LANC DC
S4
LANC SIG
S5
KEY IN 6
S6
KEY IN 1
S7
KEY IN 4
S8
KEY IN 3
S9
KEY IN 2
S15
N.C
S16
KEY IN 0
S17
KEY IN 5
S18
REG GND
S19
KEY OUT 4
S20
KEY OUT 5
S21
AUTO LOCK LED
S22
KEY OUT 3
S23
D 5V
COM 0
LI 3V
COM 1
KEY OUT 2
COM 2
KEY OUT 0
COM 3
KEY OUT 1
S14
S11
S10
S12
TO
VC-135 BOARD
(4/4)
CN922
(See Page 92)
D201
AUTO LOCK
S201
HI-FI SOUND
D202
MA121
EDIT
REC MODE
S202
SP
LP
S203
AUTO
OFF
Hi8
D203
MA121
S204
WHT BAL
S205
SUPERIMPOSE
ON/OFF
S206
START/STOP
S207
DATE (+)
S208
MEMORY
S209
TIME (NEXT)
S210
COLOR / MODE
S211
EXPOSURE
S212
SHUTTER SPEED
S213
FOCUS
S214
SUMMER TIME
S215
AREA
S216
ON
OFF
STEADY SHOT
S217
AUTO LOCK
S218
S219
+
−
D204
MA121
CF-4 BOARD
CN202 2P
LI 3V
REG GND
LITHIUM
BATTERY
CN203 5P
N.C
LANC DC
LANC SIG
REG GND
N.C
CF GND
LJ-13 BOARD
(A-1)
CN511 5P
N.C
LANC DC
LANC SIG
SS GND
N.C
CHASSIS GND
R511 0
R512 0
R513 0
C511
1000p
B
C513
1000p
B
D513
MA110
J511
REMOTE

Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.


7
8
9
10
11
12
13
14
COM 2
COM 3
N.C
S26
S27
S201
1
2
HI-FI SOUND
D202
MA121
EDIT
REC MODE
S202
SP
LP
S203
AUTO
OFF
Hi8
D203
MA121
S204
WHT BAL
S207
DATE (+)
S209
TIME (NEXT)
S212
SHUTTER SPEED
S216
ON
OFF
STEADY SHOT
S217
AUTO LOCK
S205
SUPERIMPOSE ON/OFF
S208
MEMORY
S210
COLOR / MODE
S213
FOCUS
S218
S219
+
−
1
2
3
S206
START/STOP
S211
EXPOSURE
S214
SUMMER TIME
S215
AREA
D204
MA121
CF-4 BOARD
LJ-13 BOARD
1
2
3
4
5
R511 0
R512 0
R513 0
J511
REMOTE
C511
1000p
B
C513
1000p
B
D513
MA110
(C-1)

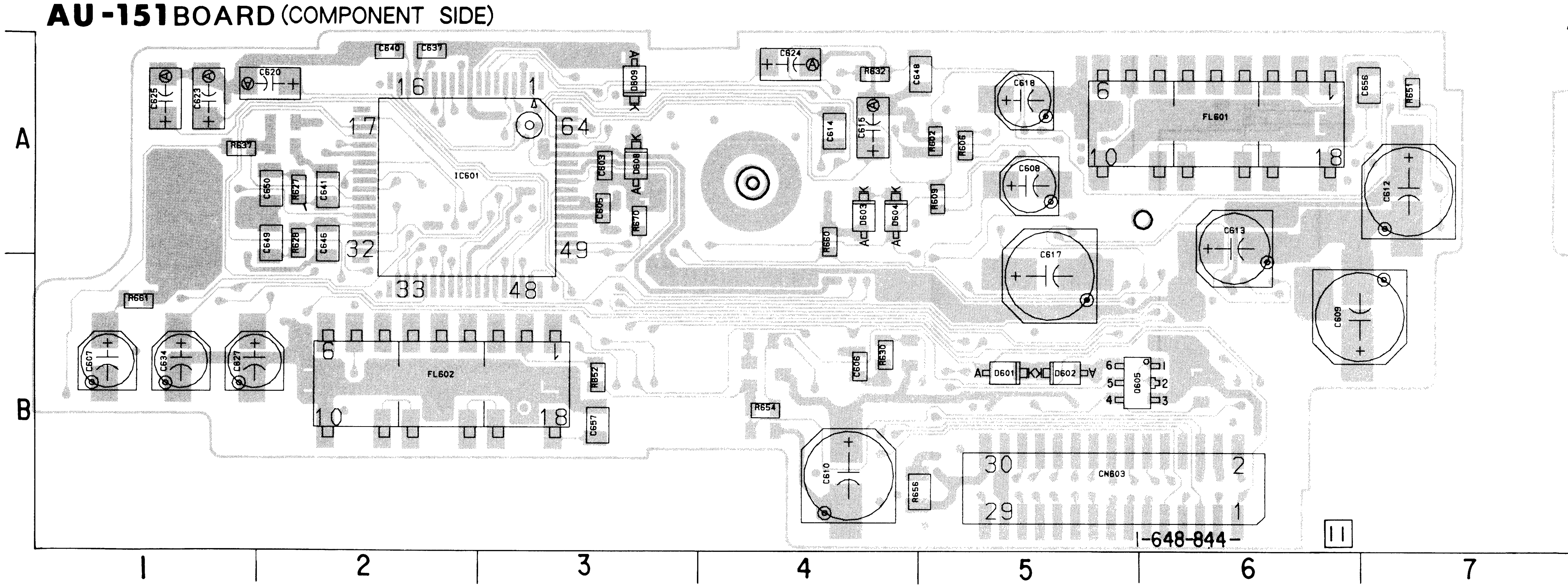
FUNCTION SWITCH

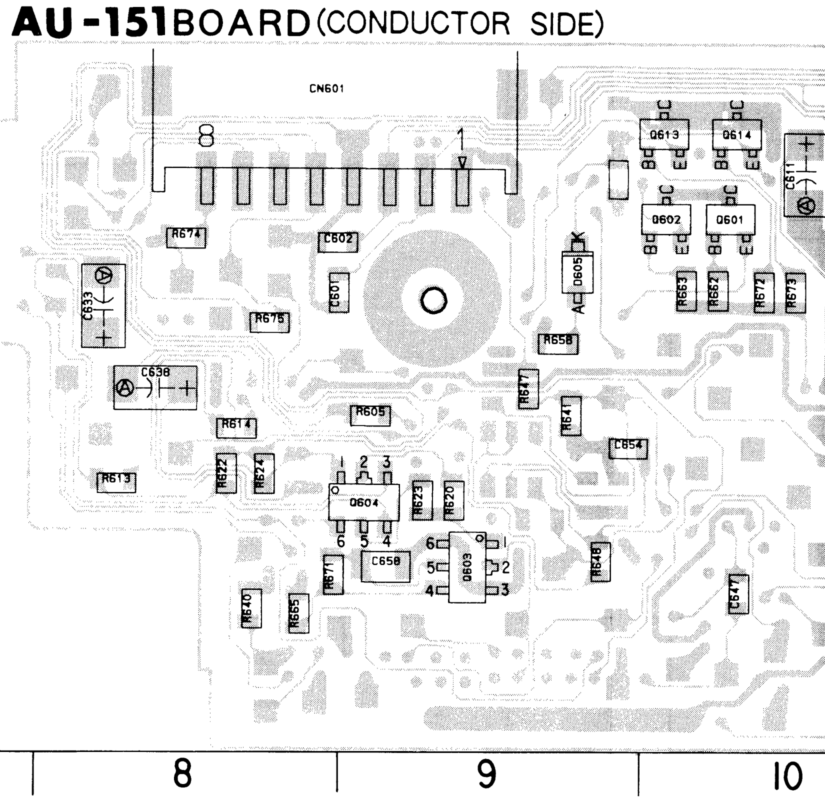
AU-151 (AUDIO), HJ-14 (HEADPHONE JACK) PRINTED WIRING BOARDS

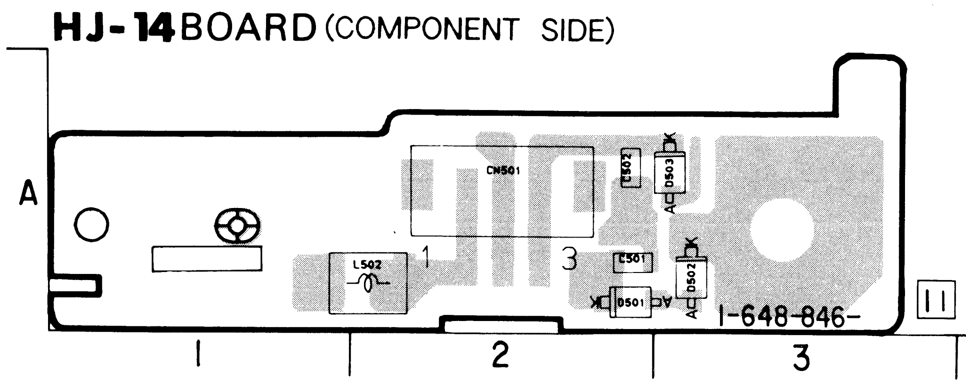
— Ref. No. AU-151, HJ-14 BOARDS: 6000 series —

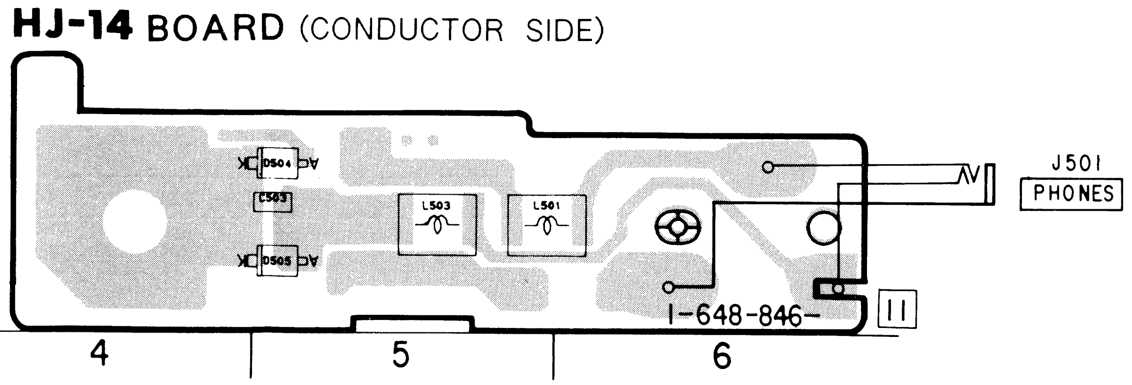
- **For printed wiring boards.**
- AU-151, HJ-14 boards are the printed wiring boards which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

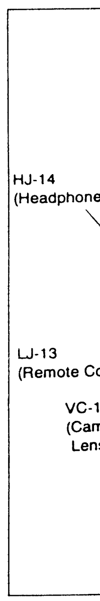
Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.


AU-151 BOARD (COMPONENT SIDE)
A
B
C625
C623
C620
C640
C637
R637
C650
R627
C641
C649
R628
C646
IC601
16
1
17
64
32
49
33
48
D609
D608
C603
C605
R670
R661
C607
C634
C627
FL602
6
10
18
R652
C657
C624
R632
C648
C614
C615
R602
R608
D603
D604
R609
R660
C618
C608
C617
C613
FL601
C656
R651
C612
C609
C606
R630
D601
D602
Q605
R654
C610
R656
CN603
30
29
2
1
1-648-844-
11
1
2
3
4
5
6
7


AU-151 BOARD (CONDUCTOR SIDE)
CN601
8
1
Q613
Q614
Q602
Q601
R674
C602
C601
D605
R663
R662
R672
R673
C633
R675
R658
C638
R605
R647
R641
R614
C654
R613
R622
R624
Q604
R623
R620
C658
Q603
R671
R640
R665
R648
C647
8
9
10

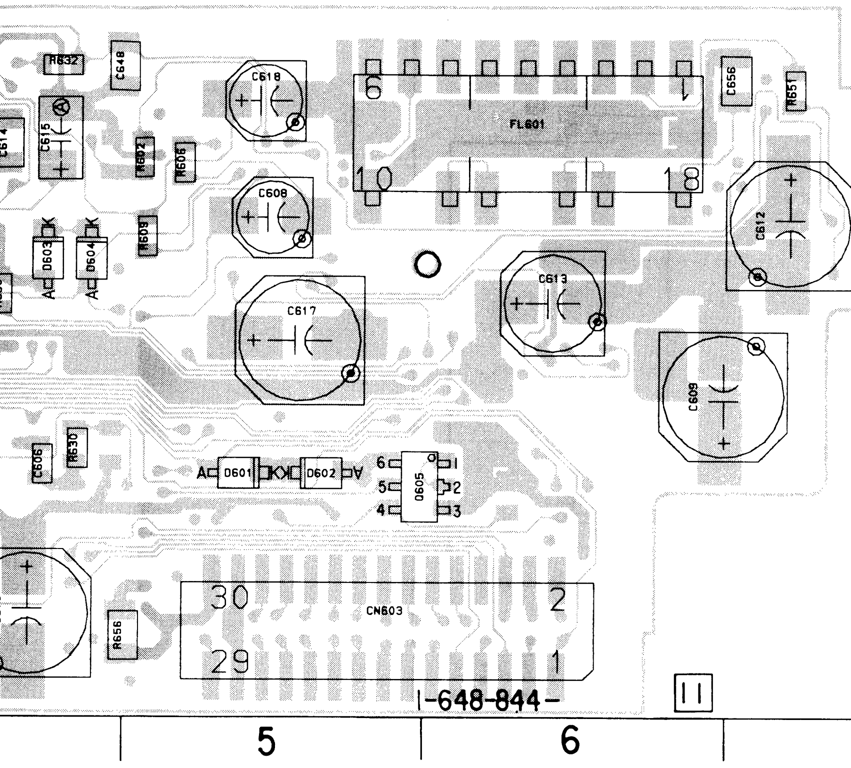

HJ-14 BOARD (COMPONENT SIDE)
A
CN501
C502
D503
L502
1
3
C501
D502
D501
1-648-846-
11
1
2
3


HJ-14 BOARD (CONDUCTOR SIDE)
D504
C503
D505
L503
L501
J501
PHONES
1-648-846-
11
4
5
6

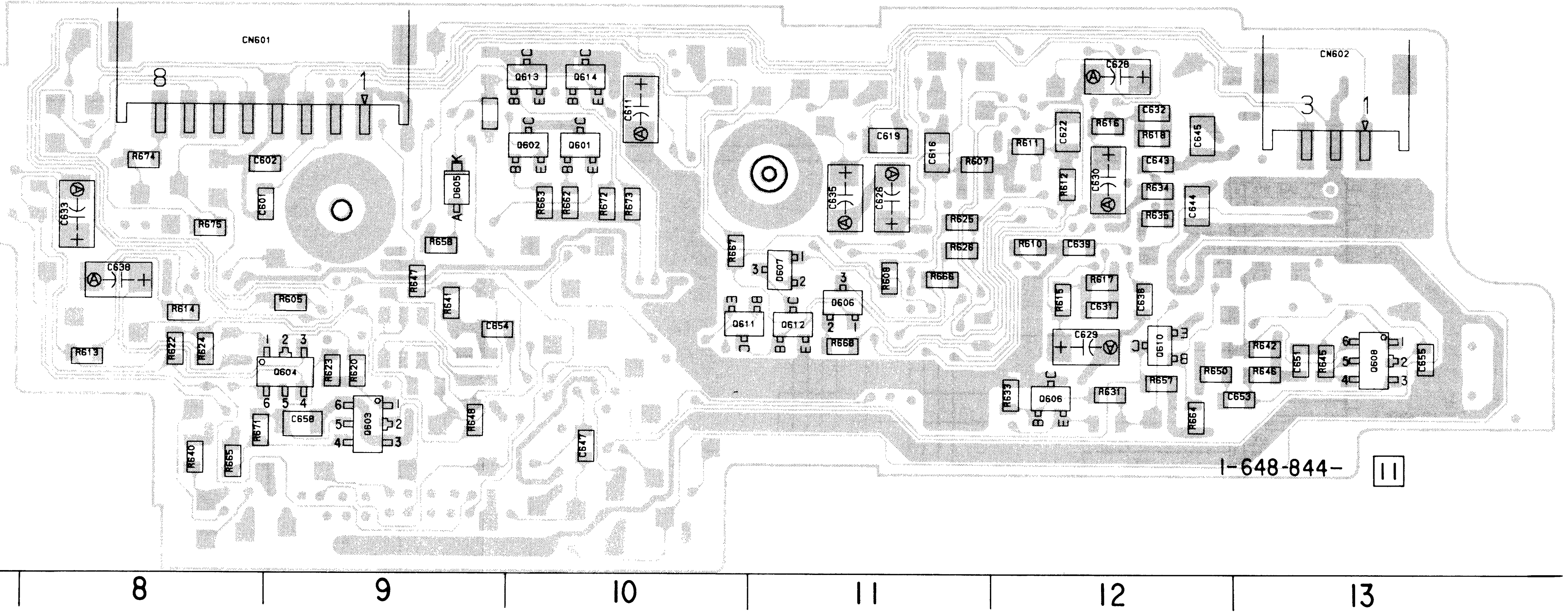

HJ-14
(Headphone
LJ-13
(Remote Co
VC-1
(Cam
Lens

en from

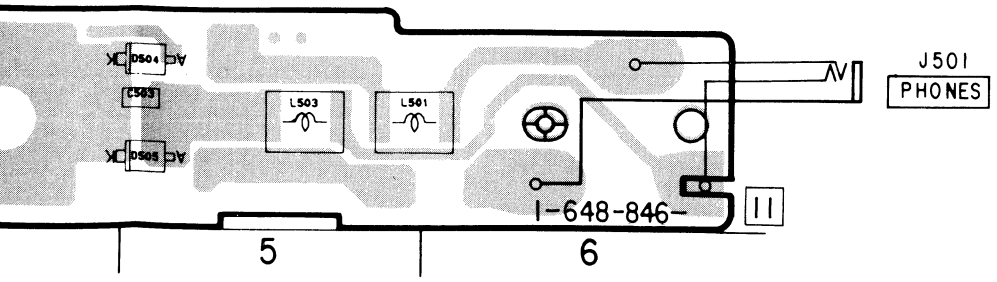
rom the

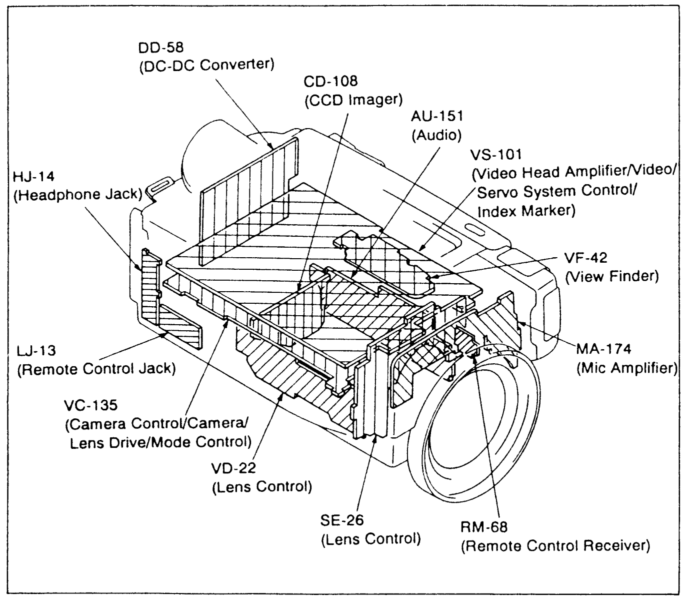

R632
C648
C618
FL601
6
10
18
C656
R651
C615
R602
R608
C608
D603
D604
R609
C612
C617
C613
C609
C606
R630
D601
D602
Q605
CN603
30
29
2
1
R656
1-648-844-
11
5
6
7

AU-151 BOARD (CONDUCTOR SIDE)


CN601
8
1
Q613
Q614
C611
Q602
Q601
R663
R662
R672
R673
C619
C616
R607
R611
C622
R616
C632
R618
C643
R634
R635
C645
C644
C628
CN602
3
1
C630
R612
C635
C626
R625
R626
R610
C639
R667
Q607
R666
R609
Q606
Q611
Q612
R668
R674
C602
R675
C601
D605
C633
R658
C638
R647
R641
R614
R605
C654
R613
R622
R624
Q604
R623
R620
Q603
C658
R671
R640
R665
R648
C647
R617
C631
R615
C636
C629
Q610
R657
R642
R646
C651
R645
Q608
C655
R650
C653
R633
Q606
R631
R664
1-648-844-
11
8
9
10
11
12
13

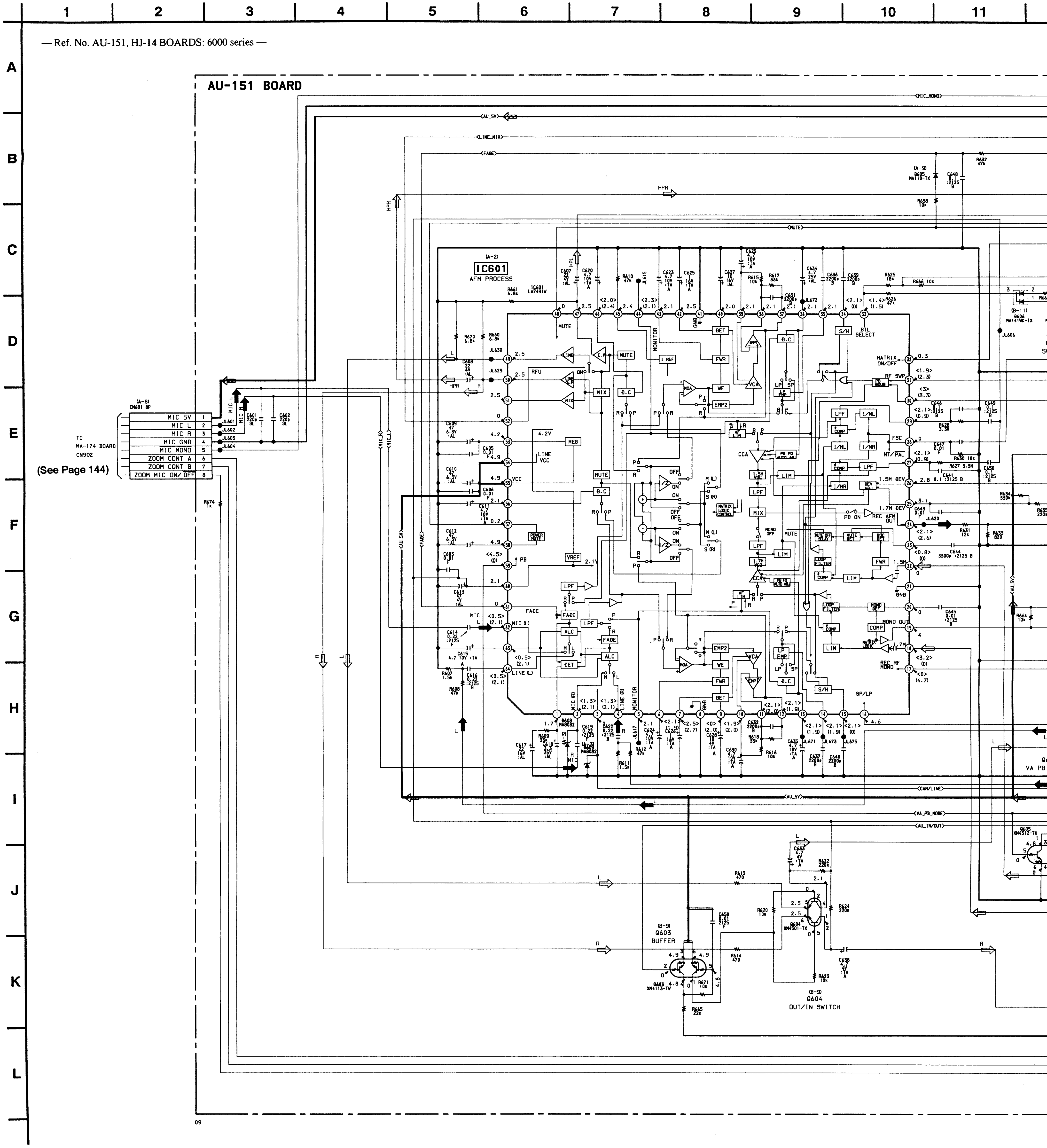
- BOARD (CONDUCTOR SIDE)


D504
C503
L503
L501
D505
J501
PHONES
1-648-846-
11
5
6


DD-58
(DC-DC Converter)
CD-108
(CCD Imager)
AU-151
(Audio)
VS-101
(Video Head Amplifier/Video/
Servo System Control/
Index Marker)
HJ-14
(Headphone Jack)
VF-42
(View Finder)
LJ-13
(Remote Control Jack)
MA-174
(Mic Amplifier)
VC-135
(Camera Control/Camera/
Lens Drive/Mode Control)
VD-22
(Lens Control)
SE-26
(Lens Control)
RM-68
(Remote Control Receiver)

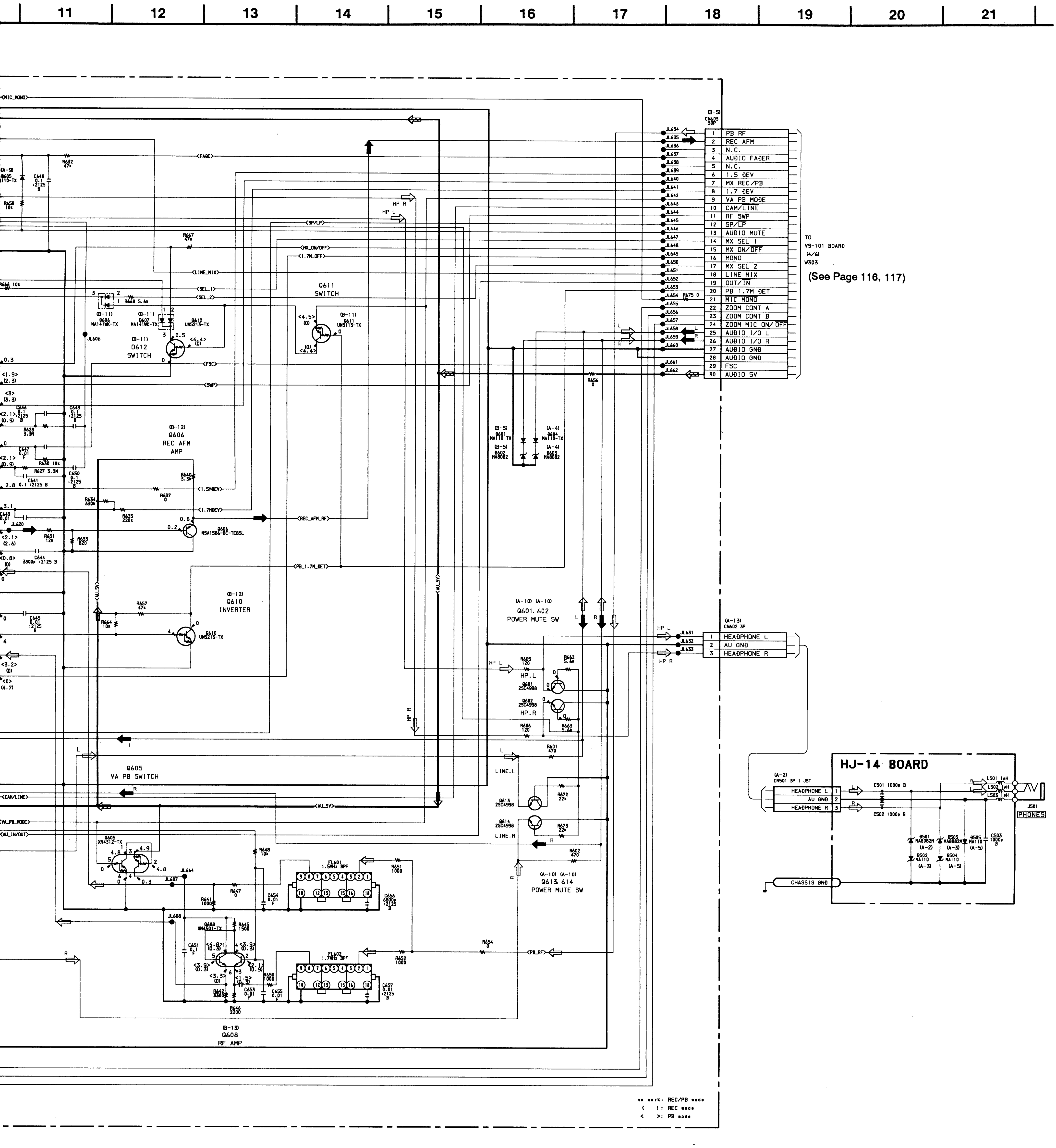
AU-151 (AUDIO), HJ-14 (HEADPHONE JACK) SCHEMATIC DIAGRAMS

— Ref. No. AU-151, HJ-14 BOARDS: 6000 series —


1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
H
I
J
K
L
AU-151 BOARD
(A-8)
CN601 8P
MIC 5V
MIC L
MIC R
MIC GND
MIC MONO
ZOOM CONT A
ZOOM CONT B
ZOOM MIC ON/OFF
TO
MA-174 BOARD
CN902
(See Page 144)
(A-2)
IC601
AFM PROCESS
IC601
LA7491W
<MIC_MONO>
<AU_5V>
<LINE_MIX>
<FADE>
<MUTE>
<CAM/LINE>
<VA_PB_MODE>
<AU_IN/OUT>
HPR
HPL
MONITOR
MATRIX ON/OFF
RF SWP
B/L SELECT
SP/LP
REC RF MONO
MONO OUT
FSC
NT/PAL
REC AFM OUT
PB ON
FADE
MIC (L)
LINE (L)
MIC (R)
LINE (R)
RFU
VCC
4.2V
REG
LINE VCC
MUTE
POWER MUTE
VREF
LPF
ALC
DET
MIX
NOA
WE
EMP2
FWR
VCA
DET
I REF
S/H
LIM
COMP
CCA
MATRIX LOGIC CONTROL
(B-9)
Q603
BUFFER
Q603
XN4113-TW
(B-9)
Q604
OUT/IN SWITCH
Q604
XN4501-TX
(A-9)
D605
MA110-TX
(B-11)
D606
MA141WK-TX
Q605
XN4312-TX
09

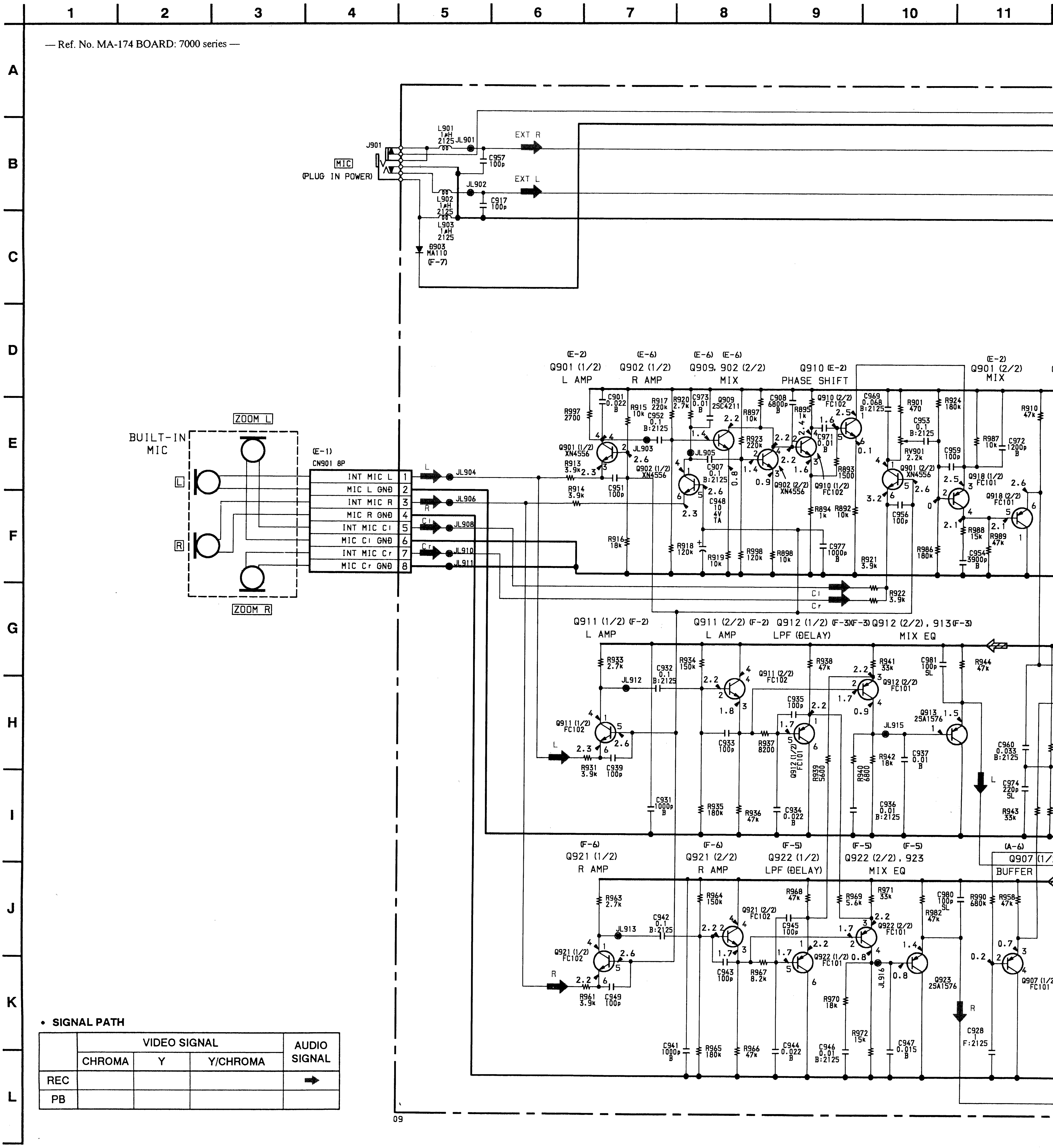
- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				⇨


11
12
13
14
15
16
17
18
19
20
21
(B-5) CN603 30P
1 PB RF
2 REC AFM
3 N.C.
4 AUDIO FADER
5 N.C.
6 1.5 DEV
7 MX REC/PB
8 1.7 DEV
9 VA PB MODE
10 CAM/LINE
11 RF SWP
12 SP/LP
13 AUDIO MUTE
14 MX SEL 1
15 MX ON/OFF
16 MONO
17 MX SEL 2
18 LINE MIX
19 OUT/IN
20 PB 1.7M DET
21 MIC MONO
22 ZOOM CONT A
23 ZOOM CONT B
24 ZOOM MIC ON/OFF
25 AUDIO I/O L
26 AUDIO I/O R
27 AUDIO GND
28 AUDIO GND
29 FSC
30 AUDIO 5V
TO VS-101 BOARD (4/6) W303
(See Page 116, 117)
Q611 SWITCH
Q612 SWITCH
Q606 REC AFM AMP
Q610 INVERTER
Q605 VA PB SWITCH
Q608 RF AMP
Q601, 602 POWER MUTE SW
Q613, 614 POWER MUTE SW
FL601 1.5MHz BPF
FL602 1.7MHz BPF
(A-13) CN602 3P
1 HEADPHONE L
2 AU GND
3 HEADPHONE R
HJ-14 BOARD
(A-2) CN501 3P I JST
HEADPHONE L
AU GND
HEADPHONE R
C501 1000p B
C502 1000p B
L501 1μH
L502 1μH
L503 1μH
J501 PHONES
CHASSIS GND
HP L
HP R
LINE.L
LINE.R
no mark: REC/PB mode
( ): REC mode
< >: PB mode

MA-174 (MIC AMPLIFIER) SCHEMATIC DIAGRAM

— Ref. No. MA-174 BOARD: 7000 series —


1
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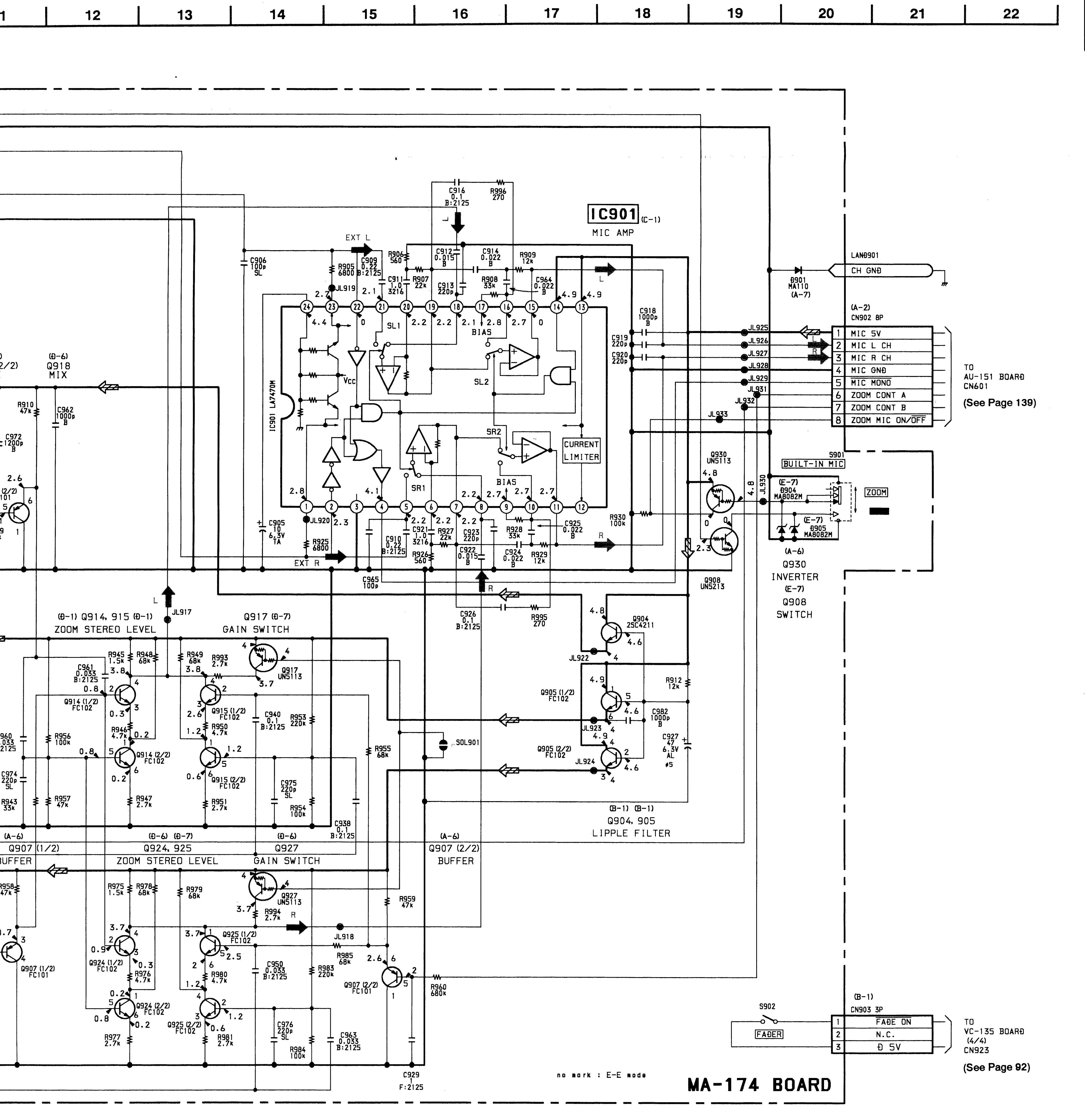
6
7
8
9
10
11
A
B
C
D
E
F
G
H
I
J
K
L
J901
MIC
(PLUG IN POWER)
L901 1μH 2125
JL901
C957 100p
EXT R
EXT L
JL902
L902 1μH 2125
C917 100p
L903 1μH 2125
D903 MA110 (F-7)
BUILT-IN MIC
ZOOM L
ZOOM R
L
R
(E-1) CN901 8P
INT MIC L 1
MIC L GND 2
INT MIC R 3
MIC R GND 4
INT MIC Cl 5
MIC Cl GND 6
INT MIC Cr 7
MIC Cr GND 8
JL904
JL906
JL908
JL910
JL911
Cl
Cr
(E-2) Q901 (1/2) L AMP
(E-6) Q902 (1/2) R AMP
(E-6) (E-6) Q909, 902 (2/2) MIX
Q910 (E-2) PHASE SHIFT
(E-2) Q901 (2/2) MIX
R997 2700
C901 0.022 B
R915 10k
R917 220k
C952 0.1 B:2125
R920 2.7k
C973 0.01 B
Q909 2SC4211
R897 10k
C908 6800p B
R895 1k
Q910 (2/2) FC102
C969 0.068 B:2125
R901 470
R924 180k
R910 47k
Q901 (1/2) XN4556
JL903
Q902 (1/2) XN4556
R913 3.9k
R914 3.9k
C951 100p
JL905
C907 0.1 B:2125
C948 10 4V TA
R923 220k
C971 0.01 B
R893 1500
Q902 (2/2) XN4556
Q910 (1/2) FC102
R894 1k
R892 10k
C953 0.1 B:2125
RV901 2.2k
Q901 (2/2) XN4556
C959 100p
R987 10k
C972 1200p B
Q918 (1/2) FC101
Q918 (2/2) FC101
C956 100p
R988 15k
R989 47k
R986 180k
C954 3900p B
R916 18k
R918 120k
R919 10k
R998 120k
R898 10k
C977 1000p B
R921 3.9k
R922 3.9k
Q911 (1/2) (F-2) L AMP
Q911 (2/2) (F-2) L AMP
Q912 (1/2) (F-3) LPF (DELAY)
(F-3) Q912 (2/2), 913 (F-3) MIX EQ
R933 2.7k
JL912
C932 0.1 B:2125
R934 150k
Q911 (2/2) FC102
R938 47k
R941 33k
Q912 (2/2) FC101
C981 100p SL
R944 47k
Q911 (1/2) FC102
R931 3.9k
C939 100p
C933 100p
C935 100p
R937 8200
Q912 (1/2) FC101
R939 5600
R940 6800
JL915
R942 18k
C937 0.01 B
Q913 2SA1576
C960 0.033 B:2125
C974 220p SL
R943 33k
C931 1000p B
R935 180k
R936 47k
C934 0.022 B
C936 0.01 B:2125
(F-6) Q921 (1/2) R AMP
(F-6) Q921 (2/2) R AMP
(F-5) Q922 (1/2) LPF (DELAY)
(F-5) (F-5) Q922 (2/2), 923 MIX EQ
(A-6) Q907 (1/ BUFFER
R963 2.7k
JL913
C942 0.1 B:2125
R964 150k
Q921 (2/2) FC102
C945 100p
R968 47k
R969 5.6k
R971 33k
Q922 (2/2) FC101
C980 100p SL
R982 47k
R990 680k
R958 47k
Q921 (1/2) FC102
R961 3.9k
C949 100p
C943 100p
R967 8.2k
Q922 (1/2) FC101
JL916
Q923 2SA1576
Q907 (1/2) FC101
R970 18k
R972 15k
C928 1 F:2125
C941 1000p B
R965 180k
R966 47k
C944 0.022 B
C946 0.01 B:2125
C947 0.015 B
09

• **SIGNAL PATH**

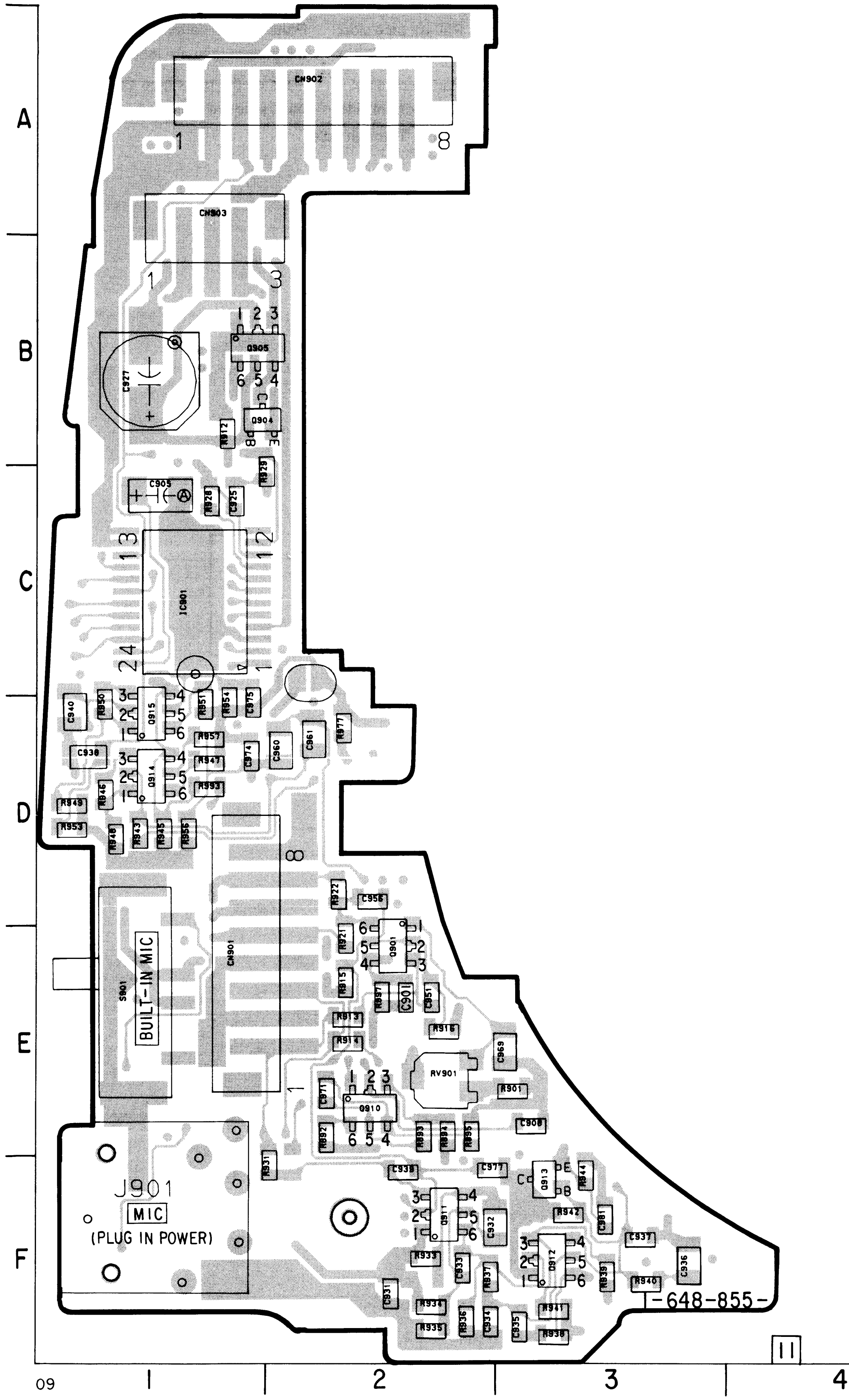
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				


12
13
14
15
16
17
18
19
20
21
22
IC901 (C-1)
MIC AMP
IC901 LA7470M
EXT L
EXT R
SL1
SL2
SR1
SR2
BIAS
Vcc
CURRENT LIMITER
LAN8901
CH GND
D901 MA110 (A-7)
(A-2) CN902 8P
1 MIC 5V
2 MIC L CH
3 MIC R CH
4 MIC GND
5 MIC MONO
6 ZOOM CONT A
7 ZOOM CONT B
8 ZOOM MIC ON/OFF
TO AU-151 BOARD CN601
(See Page 139)
S901 BUILT-IN MIC
ZOOM
(E-7) D904 MA8082M
(E-7) D905 MA8082M
Q930 UN5113
Q908 UN5213
(A-6) Q930 INVERTER
(E-7) Q908 SWITCH
Q904 2SC4211
Q905 (1/2) FC102
Q905 (2/2) FC102
(B-1) (B-1) Q904, 905 LIPPLE FILTER
(D-6) Q918 MIX
(D-1) Q914, 915 (D-1) ZOOM STEREO LEVEL
Q917 (D-7) GAIN SWITCH
Q917 UN5113
Q914 (1/2) FC102
Q914 (2/2) FC102
Q915 (1/2) FC102
Q915 (2/2) FC102
SOL901
(A-6) Q907 (1/2) BUFFER
(D-6) (D-7) Q924, 925 ZOOM STEREO LEVEL
(D-6) Q927 GAIN SWITCH
(A-6) Q907 (2/2) BUFFER
Q927 UN5113
Q924 (1/2) FC102
Q924 (2/2) FC102
Q925 (1/2) FC102
Q925 (2/2) FC102
Q907 (1/2) FC101
Q907 (2/2) FC101
JL917
JL918
JL919
JL920
JL922
JL923
JL924
JL925
JL926
JL927
JL928
JL929
JL930
JL931
JL932
JL933
S902
FADER
(B-1) CN903 3P
1 FADE ON
2 N.C.
3 D 5V
TO VC-135 BOARD (4/4) CN923
(See Page 92)
no mark : E-E mode
MA-174 BOARD

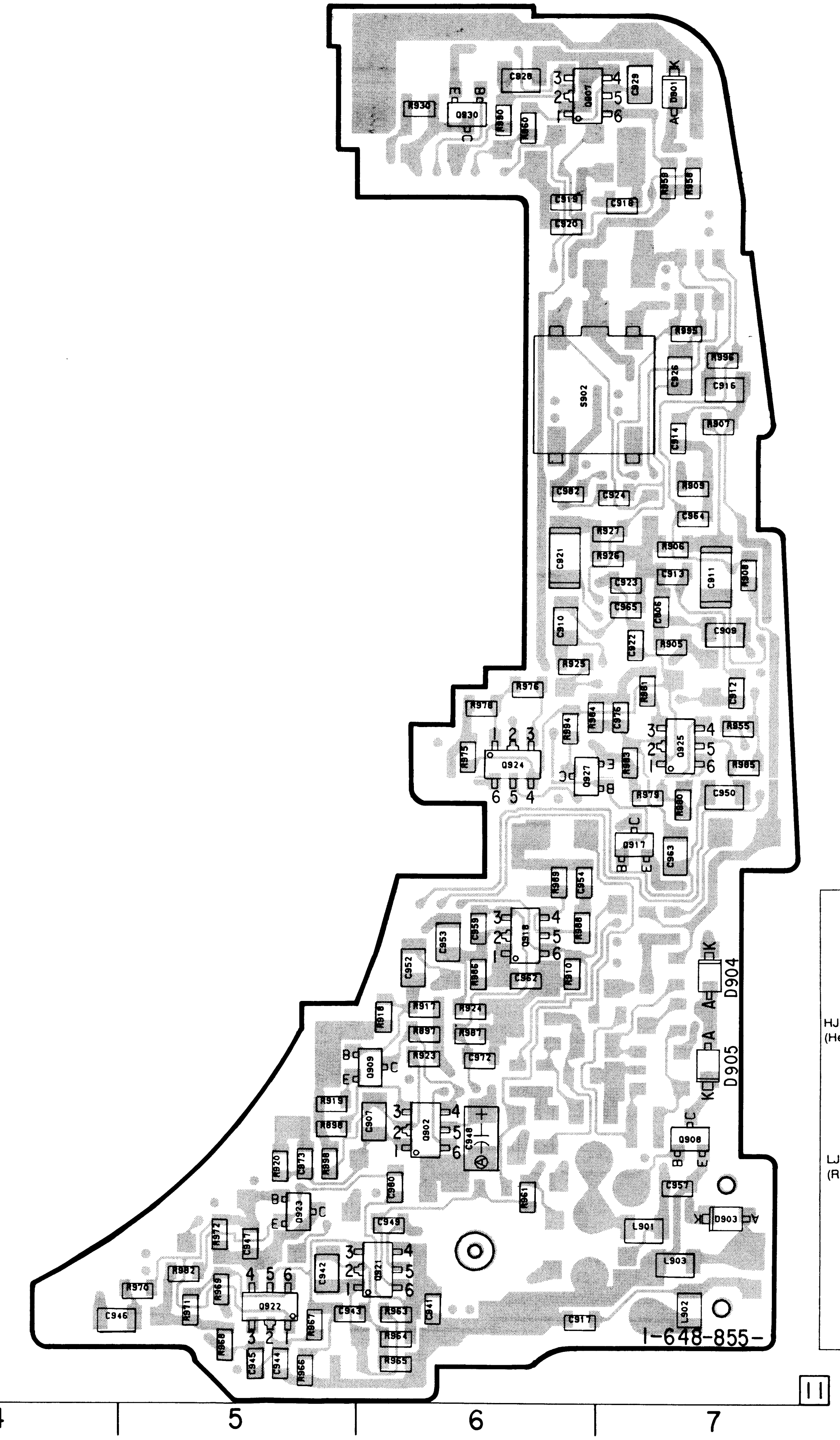
MA-174 (MIC AMPLIFIER) PRINTED WIRING BOARD

— Ref. No. MA-174 BOARD: 7000 series —

MA-174 BOARD (COMPONENT SIDE)


A
B
C
D
E
F
CN902
CN903
Q905
C927
Q904
C905
IC901
Q915
Q914
CN901
S901
BUILT-IN MIC
RV901
Q901
Q910
Q911
Q912
Q913
J901
MIC
(PLUG IN POWER)
1-648-855-
11
09
1
2
3
4

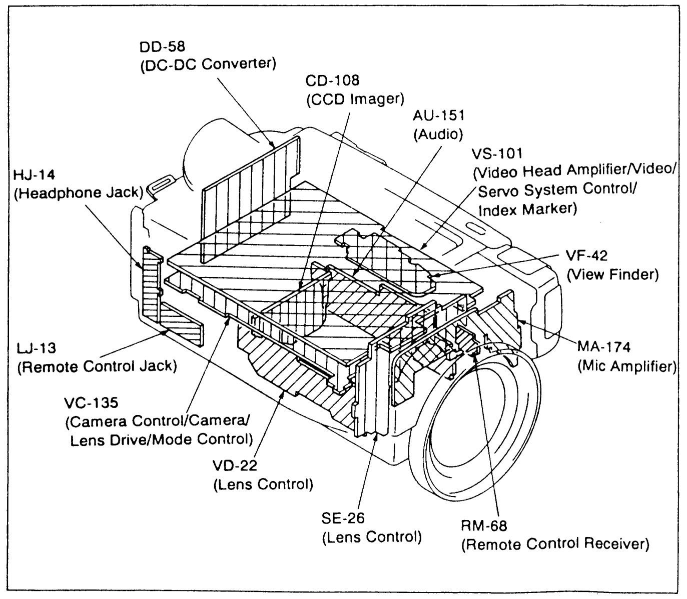
MA-174 BOARD (CONDUCTOR SIDE)


Q930
Q907
D901
S902
Q924
Q925
Q917
Q918
Q909
Q902
Q908
Q923
Q921
Q922
D904
D905
D903
L901
L903
1-648-855-
11
5
6
7

- **For printed wiring boards.**
- MA-174 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.


DD-58
(DC-DC Converter)
CD-108
(CCD Imager)
AU-151
(Audio)
VS-101
(Video Head Amplifier/Video/Servo System Control/Index Marker)
HJ-14
(Headphone Jack)
VF-42
(View Finder)
MA-174
(Mic Amplifier)
LJ-13
(Remote Control Jack)
VC-135
(Camera Control/Camera/Lens Drive/Mode Control)
VD-22
(Lens Control)
SE-26
(Lens Control)
RM-68
(Remote Control Receiver)

VF-42 (VIEW FINDER) PRINTED WIRING BOARD

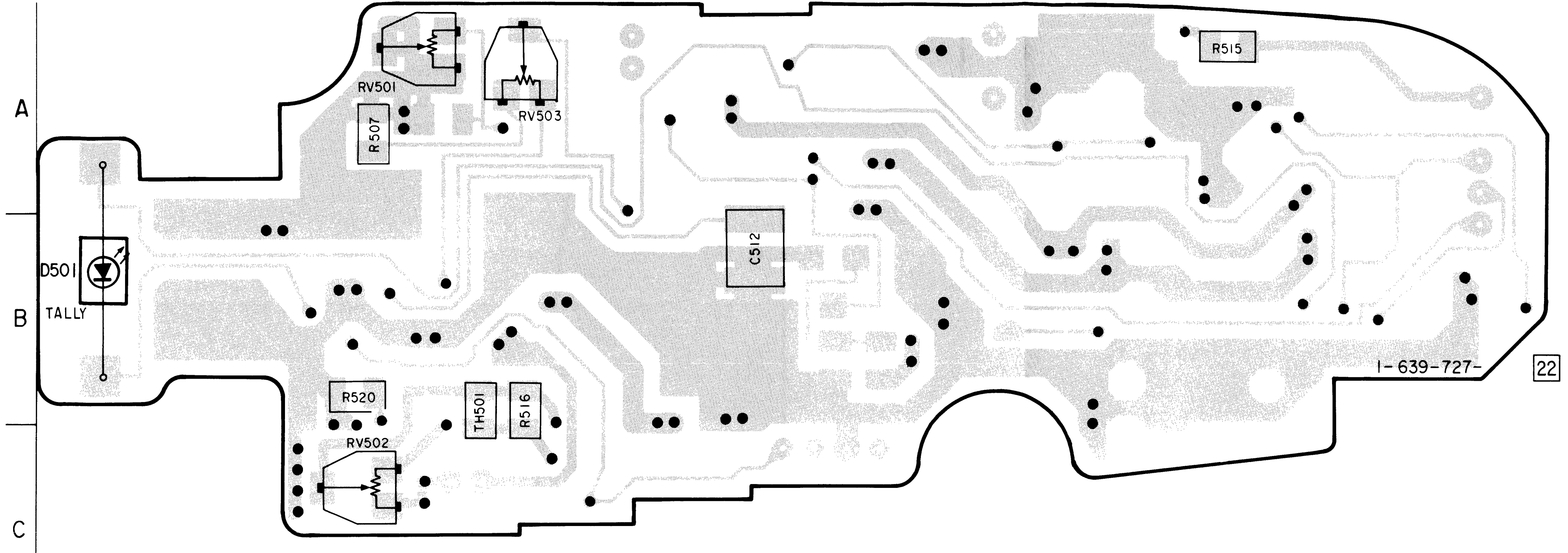
— Ref. No. VF-42 BOARD: 8000 series —

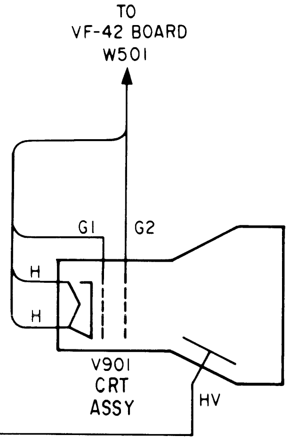
- **For printed wiring boards.**

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

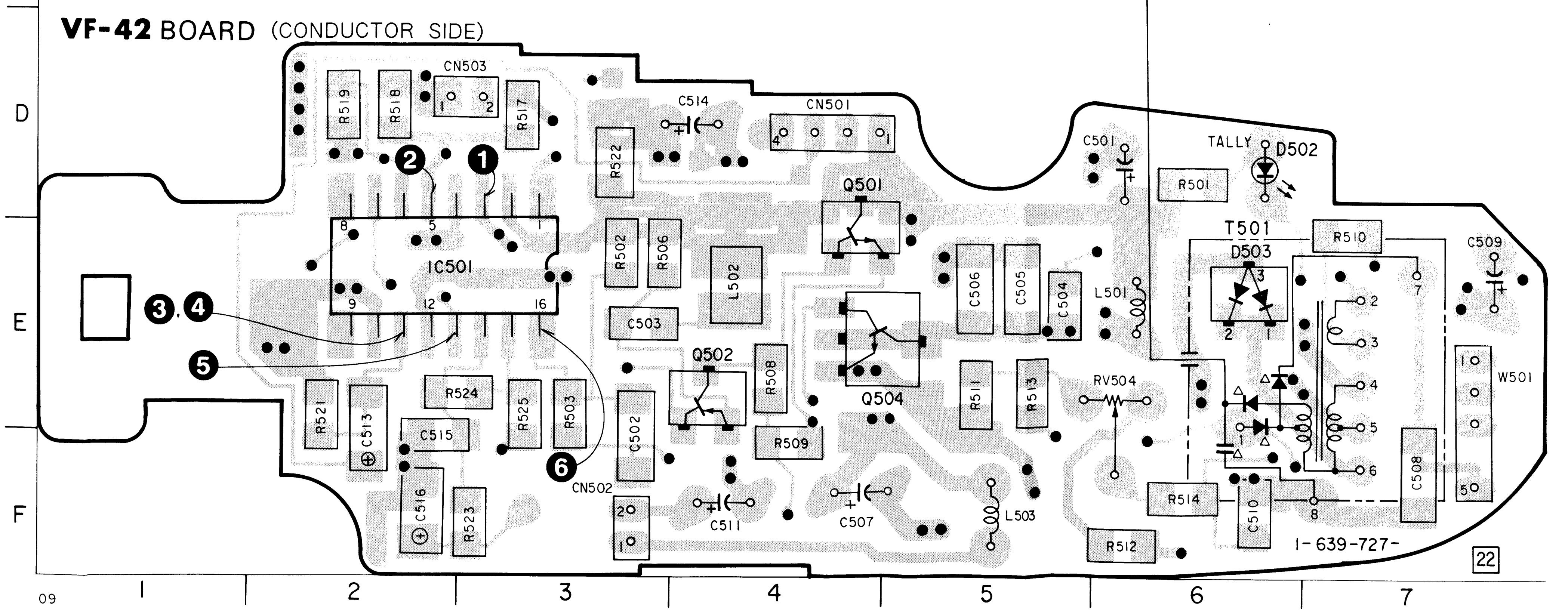
- ● : Through hole.

VF-42 BOARD (COMPONENT SIDE)


A
B
C
D501
TALLY
RV501
R507
RV503
C512
R515
R520
RV502
TH501
R516
1-639-727-
22


TO
VF-42 BOARD
W501
G1
G2
H
H
V901
CRT
ASSY
HV

VF-42 BOARD (CONDUCTOR SIDE)


D
E
F
09
1
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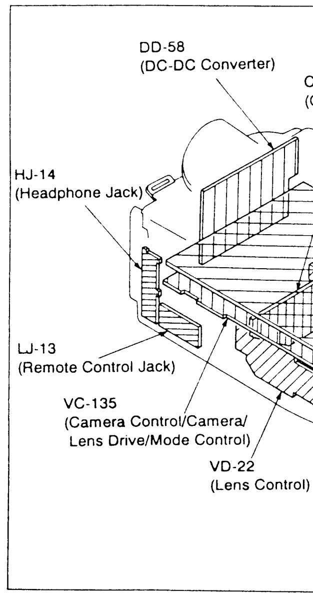
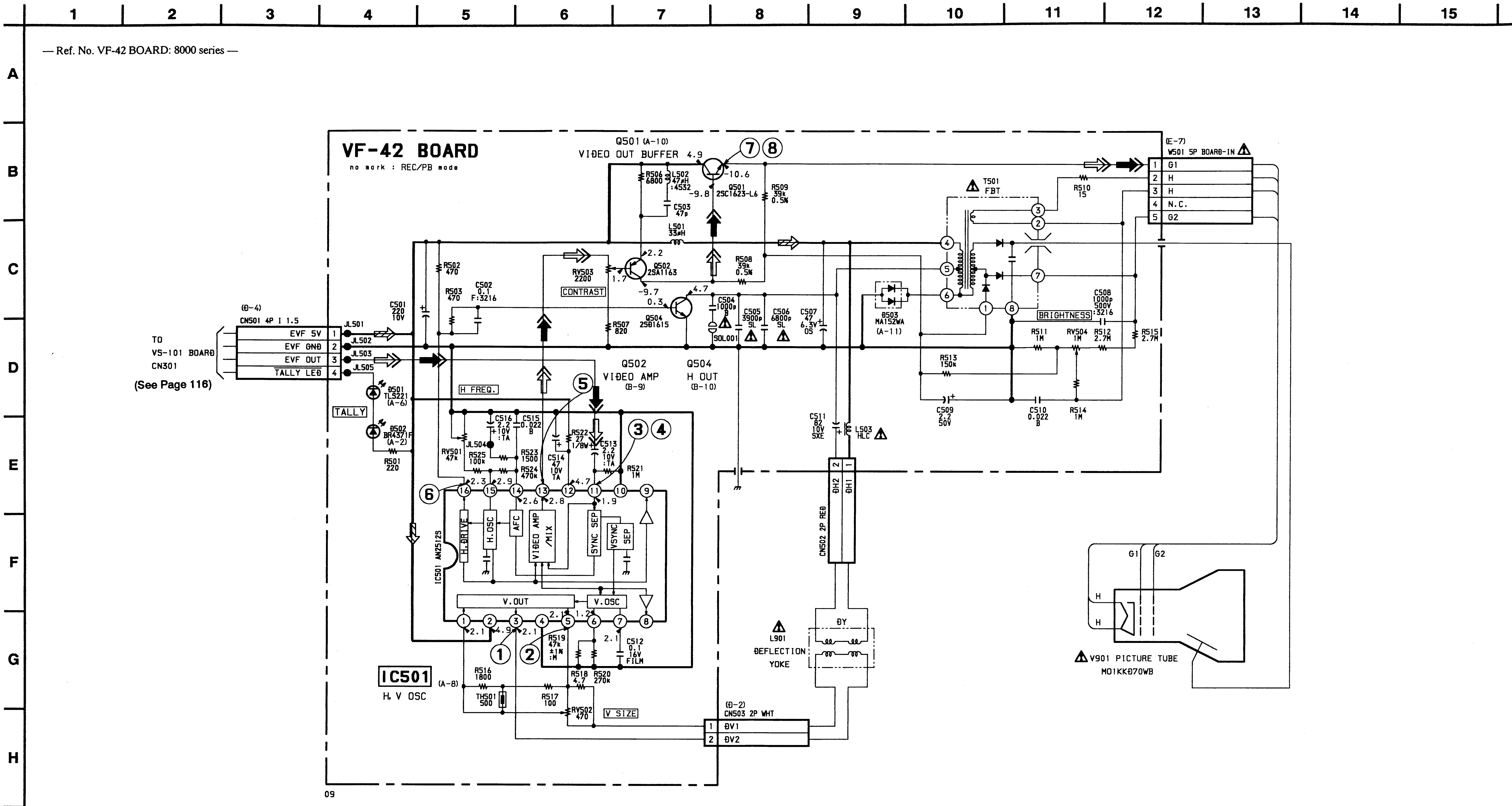
3
4
5
6
7
CN503
R519
R518
R517
C514
CN501
R522
Q501
C501
TALLY
D502
R501
T501
D503
R510
C509
IC501
8
5
1
9
12
16
❶
❷
❸,❹
❺
❻
R502
R506
L502
C506
C505
C504
L501
C503
Q502
R508
Q504
R511
R513
RV504
W501
R521
C513
R524
C515
R525
R503
C502
R509
C516
R523
CN502
C511
C507
L503
R514
C510
R512
C508
1-639-727-
22


DD-58
(DC-DC Converter)
CD-108
(CCD Imager)
AU-151
(Audio)
VS-101
(Video Head Amplifier/Video/
Servo System Control/
Index Marker)
HJ-14
(Headphone Jack)
VF-42
(View Finder)
LJ-13
(Remote Control Jack)
MA-174
(Mic Amplifier)
VC-135
(Camera Control/Camera/
Lens Drive/Mode Control)
VD-22
(Lens Control)
SE-26
(Lens Control)
RM-68
(Remote Control Receiver)

VF-42 (VIEW FINDER) SCHEMATIC DIAGRAM

— Ref. No. VF-42 BOARD: 8000 series —


1
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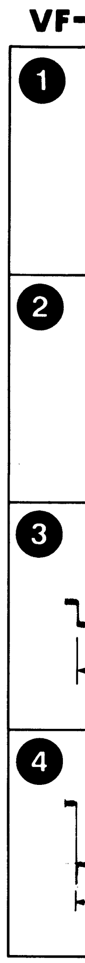
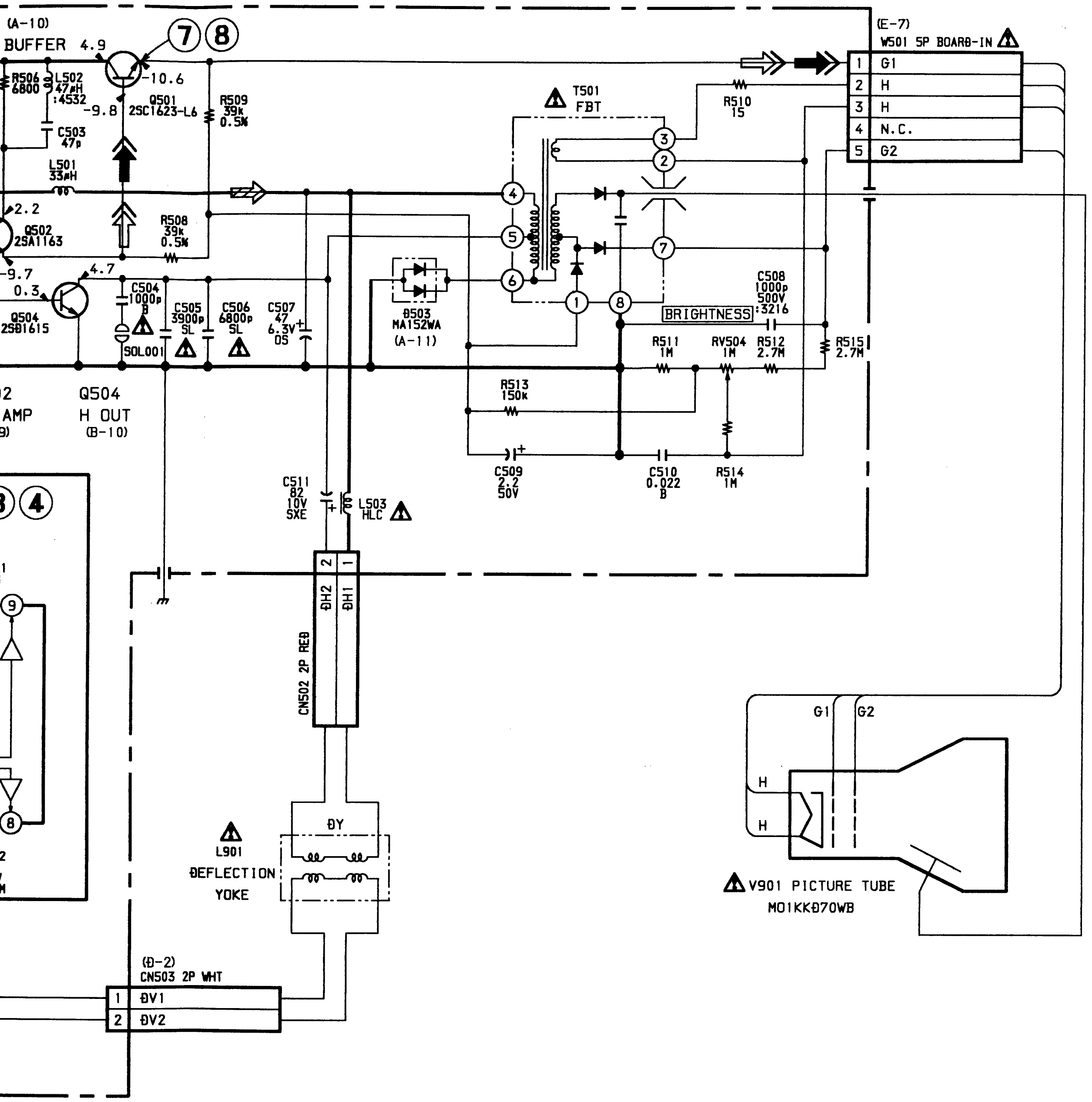
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
VF-42 BOARD
no mark : REC/PB mode
Q501 (A-10)
VIDEO OUT BUFFER 4.9
⑦⑧
R506 6800
L502 47μH :4532
-10.6
-9.8
Q501 2SC1623-L6
R509 39k 0.5W
C503 47p
L501 33μH
R502 470
R503 470
C502 0.1 F:3216
RV503 2200
CONTRAST
2.2
1.7
Q502 2SA1163
-9.7
0.3
4.7
Q504 2SB1615
R507 820
R508 39k 0.5W
C504 1000p B
C505 3900p SL
C506 6800p SL
C507 47 6.3V OS
SOL001
(D-4)
CN501 4P I 1.5
EVF 5V
EVF GND
EVF OUT
TALLY LED
JL501
JL502
JL503
JL505
C501 220 10V
TO
VS-101 BOARD
CN301
(See Page 116)
D501 TLS221 (A-6)
D502 BR4371F (A-2)
R501 220
TALLY
H FREQ.
Q502 VIDEO AMP (B-9)
Q504 H OUT (B-10)
⑤
③④
⑥
C516 2.2 10V :TA
C515 0.022 B
R522 27 1/8W
C513 2.2 10V :TA
RV501 47k
JL504
R525 100k
R523 1500
R524 470k
C514 47 10V TA
R521 1M
2.3
2.9
2.6
2.8
4.7
1.9
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V.OUT
V.OSC
IC501 AN2512S
2.1
4.9
2.1
2.1
1.2
①
②
R519 47k ±1% :M
2.1
C512 0.1 16V FILM
R516 1800
TH501 500
R517 100
R518 4.7
R520 270k
RV502 470
V SIZE
IC501
H, V OSC
(A-8)
(D-2)
CN503 2P WHT
DV1
DV2
09
T501 FBT
R510 15
(E-7)
W501 5P BOARD-IN
G1
H
H
N.C.
G2
D503 MA152WA (A-11)
BRIGHTNESS
C508 1000p 500V :3216
R511 1M
RV504 1M
R512 2.7M
R515 2.7M
R513 150k
C509 2.2 50V
C510 0.022 B
R514 1M
C511 82 10V SXE
L503 HLC
CN502 2P RED
DH2
DH1
L901 DEFLECTION YOKE
DY
G1
G2
H
H
V901 PICTURE TUBE M01KKD70WB



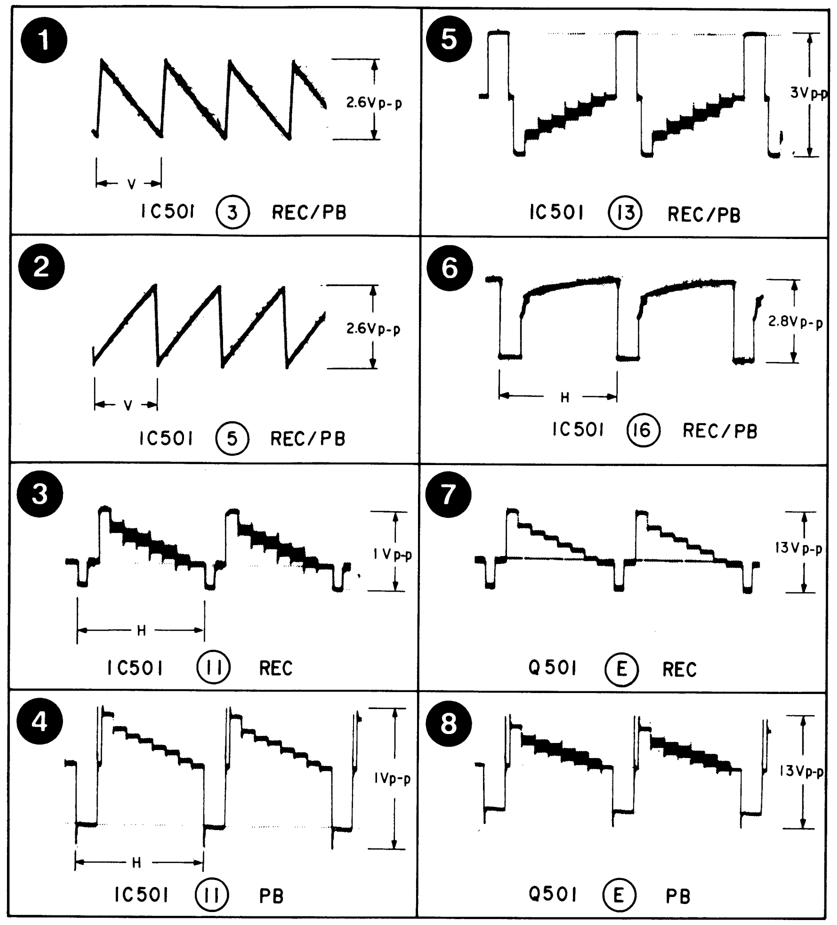
Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

- **SIGNAL PATH**

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC		➡	
PB		⇨	


(A-10)
BUFFER 4.9
⑦⑧
R506 6800
L502 47μH :4532
-10.6
-9.8
Q501 2SC1623-L6
R509 39k 0.5W
C503 47p
L501 33μH
2.2
Q502 2SA1163
R508 39k 0.5W
-9.7
0.3
4.7
Q504 2SB1615
C504 1000p B
C505 3900p SL
C506 6800p SL
C507 47 6.3V OS
SOL001
Q504 H OUT (B-10)
AMP
③④
T501 FBT
R510 15
(E-7) W501 5P BOARD-IN
1 G1
2 H
3 H
4 N.C.
5 G2
D503 MA152WA (A-11)
C508 1000p 500V :3216
BRIGHTNESS
R511 1M
RV504 1M
R512 2.7M
R515 2.7M
R513 150k
C509 2.2 50V
C510 0.022 B
R514 1M
C511 82 10V SXE
L503 HLC
CN502 2P RED
DH2 DH1
L901 DEFLECTION YOKE
DY
G1 G2
H
H
V901 PICTURE TUBE M01KKD70WB
(D-2) CN503 2P WHT
1 DV1
2 DV2

VF-42 BOARD



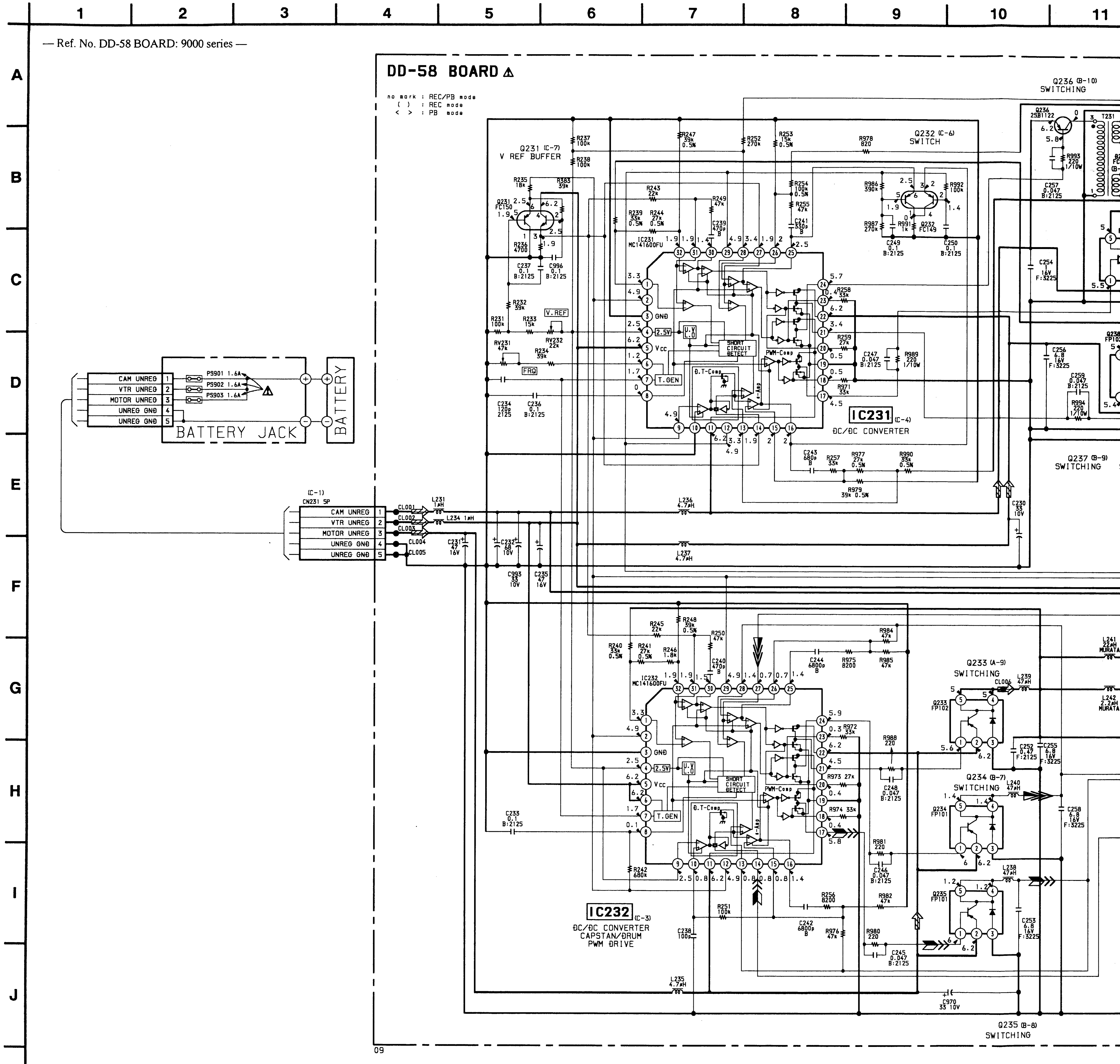
Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

- **SIGNAL PATH**

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC		➡	
PB		⇨	

DD-58 (DC-DC CONVERTER) SCHEMATIC DIAGRAM

— Ref. No. DD-58 BOARD: 9000 series —


1
2
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4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
H
I
J
DD-58 BOARD ⚠
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
Q231 (C-7) V REF BUFFER
Q232 (C-6) SWITCH
Q236 (B-10) SWITCHING
Q237 (B-9) SWITCHING
Q233 (A-9) SWITCHING
Q234 (B-7) SWITCHING
Q235 (B-8) SWITCHING
IC231 MC14160OFU
IC231 (C-4) DC/DC CONVERTER
IC232 MC14160OFU
IC232 (C-3) DC/DC CONVERTER CAPSTAN/DRUM PWM DRIVE
GND
Vcc
2.5V
U.V L.O
SHORT CIRCUIT DETECT
T.GEN
O.T-Comp
PWM-Comp
V.REF
FRQ
CAM UNREG
VTR UNREG
MOTOR UNREG
UNREG GND
UNREG GND
PS901 1.6A
PS902 1.6A
PS903 1.6A
BATTERY JACK
BATTERY
(C-1) CN231 5P
T231
09

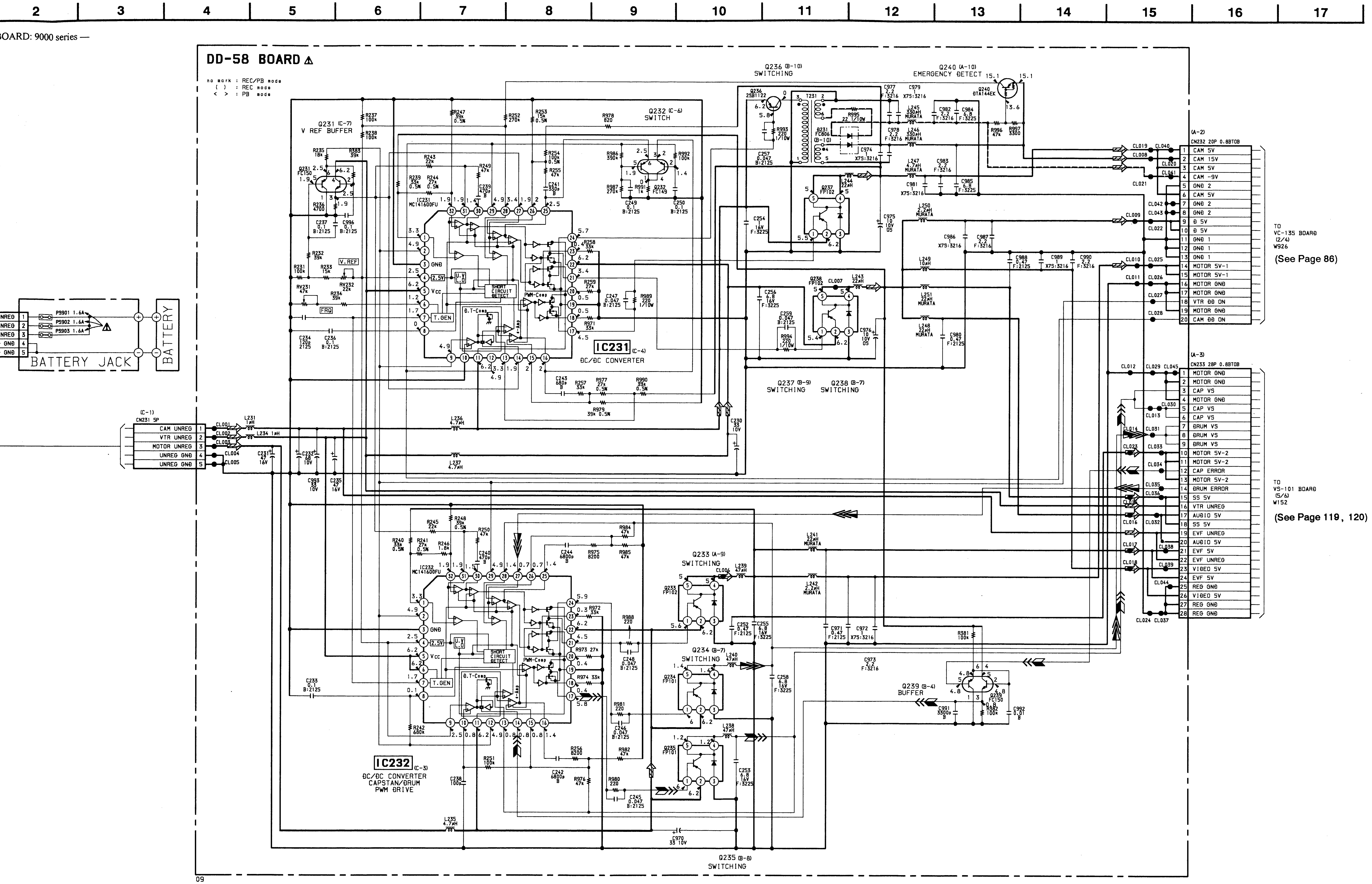
Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

- **SIGNAL PATH**

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)		⋙	
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)		⇒»	

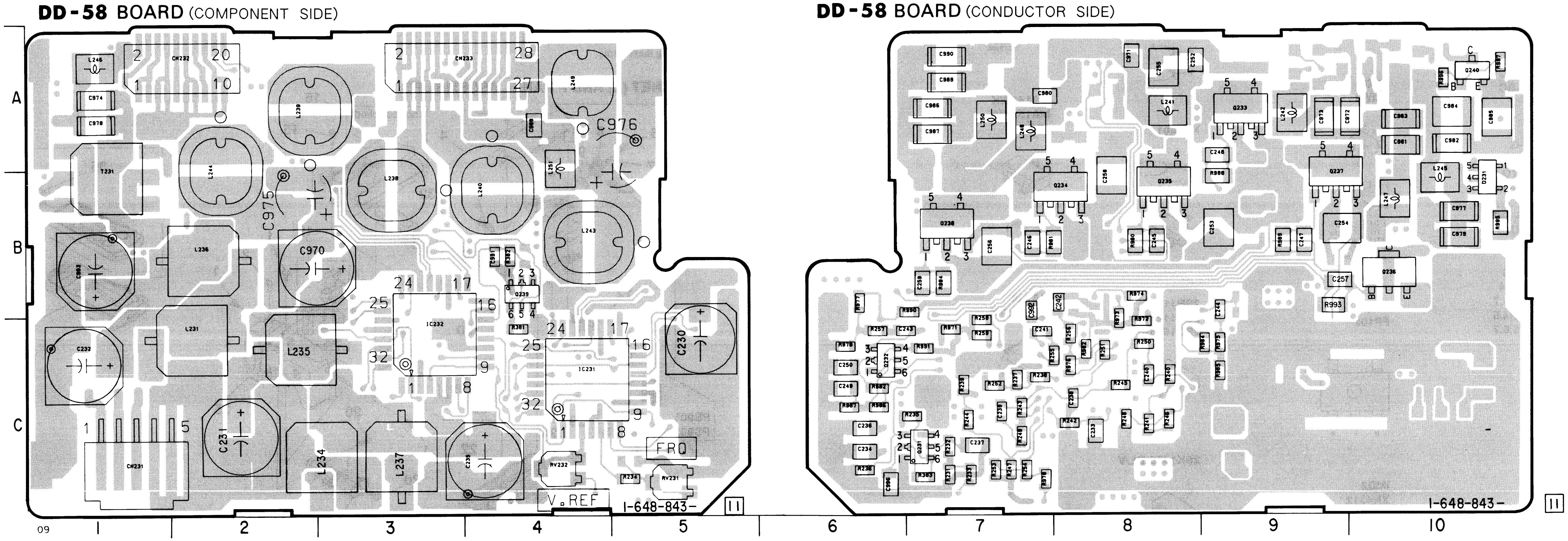
ONVERTER) SCHEMATIC DIAGRAM

OARD: 9000 series —


2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
DD-58 BOARD ⚠
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
Q231 (C-7) V REF BUFFER
Q231 FC150
Q232 (C-6) SWITCH
Q232 FC149
Q236 (B-10) SWITCHING
Q236 2SB1122
T231
D231 FC806 (B-10)
Q240 (A-10) EMERGENCY DETECT
Q240 DTA144EK
IC231 MC141600FU
IC231 (C-4) DC/DC CONVERTER
V.REF
FRQ
2.5V
U.V L.O
SHORT CIRCUIT DETECT
PWM-Comp
D.T-Comp
T.GEN
GND
Vcc
Q237 (B-9) SWITCHING
Q237 FP102
Q238 (B-7) SWITCHING
Q238 FP102
PS901 1.6A
PS902 1.6A
PS903 1.6A
BATTERY JACK
BATTERY
(C-1) CN231 5P
1 CAM UNREG
2 VTR UNREG
3 MOTOR UNREG
4 UNREG GND
5 UNREG GND
(A-2) CN232 20P 0.8BTOB
1 CAM 5V
2 CAM 15V
3 CAM 5V
4 CAM -9V
5 GND 2
6 CAM 5V
7 GND 2
8 GND 2
9 D 5V
10 D 5V
11 GND 1
12 GND 1
13 GND 1
14 MOTOR 5V-1
15 MOTOR 5V-1
16 MOTOR GND
17 MOTOR GND
18 VTR DD ON
19 MOTOR GND
20 CAM DD ON
TO VC-135 BOARD (2/4) W926
(See Page 86)
(A-3) CN233 28P 0.8BTOB
1 MOTOR GND
2 MOTOR GND
3 CAP VS
4 MOTOR GND
5 CAP VS
6 CAP VS
7 DRUM VS
8 DRUM VS
9 DRUM VS
10 MOTOR 5V-2
11 MOTOR 5V-2
12 CAP ERROR
13 MOTOR 5V-2
14 DRUM ERROR
15 SS 5V
16 VTR UNREG
17 AUDIO 5V
18 SS 5V
19 EVF UNREG
20 AUDIO 5V
21 EVF 5V
22 EVF UNREG
23 VIDEO 5V
24 EVF 5V
25 REG GND
26 VIDEO 5V
27 REG GND
28 REG GND
TO VS-101 BOARD (5/6) W152
(See Page 119 , 120)
IC232 MC141600FU
IC232 (C-3) DC/DC CONVERTER CAPSTAN/DRUM PWM DRIVE
Q233 (A-9) SWITCHING
Q233 FP102
Q234 (B-7) SWITCHING
Q234 FP101
Q235 FP101
Q235 (B-8) SWITCHING
Q239 (B-4) BUFFER
Q239 FC150
09

DD-58 (DC-DC CONVERTER) PRINTED WIRING BOARD

— Ref. No. DD-58 BOARD: 9000 series —

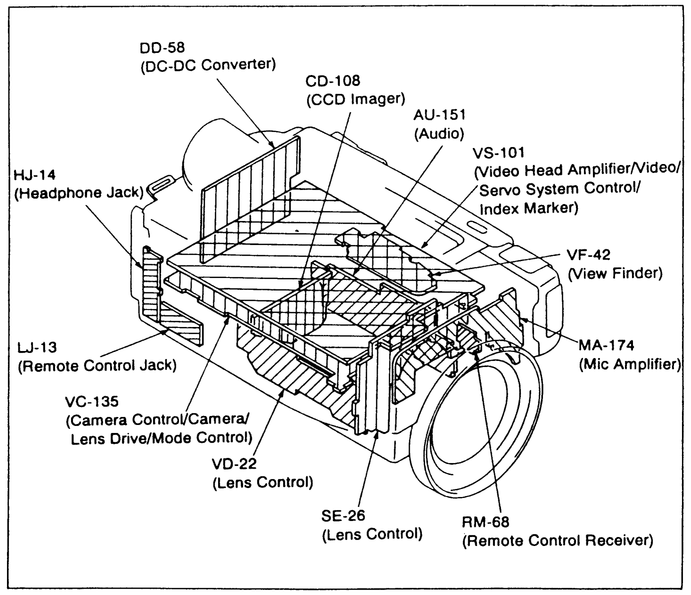

DD-58 BOARD (COMPONENT SIDE)

DD-58 BOARD (CONDUCTOR SIDE)

A
B
C
09
1
2
3
4
5
6
7
8
9
10
CN232
CN233
CN231
L246
C974
C978
T231
L244
L239
L238
L240
L243
L249
L251
C975
C976
C970
C982
C232
C231
C235
C230
L236
L231
L235
L234
L237
IC232
IC231
Q239
RV232
RV231
R234
FRQ
V.REF
1-648-843-
11
C990
C989
C986
C987
C980
L250
L248
C971
C255
C252
L241
Q233
L242
C973
C972
C983
C981
C984
C985
C982
Q240
R987
R986
Q234
Q235
Q237
Q238
Q236
Q232
Q231
L245
D231
L247
C977
C979
R995
C254
C257
R993
C256
C253
C259
R984
C250
C249
C236
C234
C237
C233
C996

- **For printed wiring boards.**
- DD-58 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- ● : Through hole is omitted.

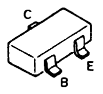
Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.



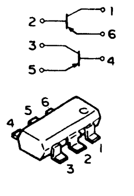
DD-58 (DC-DC Converter)
CD-108 (CCD Imager)
AU-151 (Audio)
VS-101 (Video Head Amplifier/Video/Servo System Control/Index Marker)
HJ-14 (Headphone Jack)
VF-42 (View Finder)
LJ-13 (Remote Control Jack)
MA-174 (Mic Amplifier)
VC-135 (Camera Control/Camera/Lens Drive/Mode Control)
VD-22 (Lens Control)
SE-26 (Lens Control)
RM-68 (Remote Control Receiver)

4-3. SEMICONDUCTORS

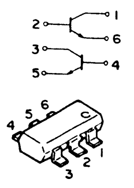
DTA114EU
DTA144EK
DTA144EU
DTA144WU
DTC114EU
DTC114TU
DTC144EU
DTC144WU
MSA1586-BC
MSC4116-BC
UN5113
UN5213
2SA1162
2SA1163-G
2SA1576-R
2SA1586-YG
2SA1611-M5M6
2SA1838
2SB1218A-QRS
2SB1295-UL5
2SC1623-L5L6
2SC3931-C
2SC4116-YG
2SC4178-F14
2SC4211-5.6.7
2SC4400-3/4/5
2SC4555-5.6.7
2SC4851
2SC4998



FC101


2
1
6
3
5
4
4
5
6
3
2
1

FC102
XN6213


2
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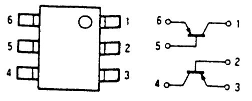
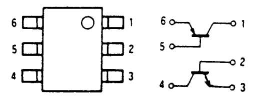
5
6
3
2
1

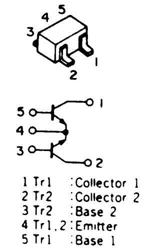
FC149
XN4401


6
5
4
1
2
3
6
5
1
2
4
3

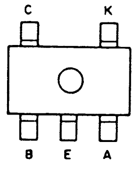
FC150


6
5
4
1
2
3
6
5
1
2
4
3

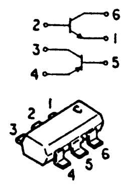
FMG2
FMW1


4
5
3
2
1
5
4
3
1
2
1 Tr1 :Collector 1
2 Tr2 :Collector 2
3 Tr2 :Base 2
4 Tr1, 2 :Emitter
5 Tr1 :Base 1

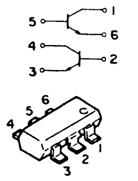
FP101
FP102



IMD2
XN4312
XN4601


2
6
1
3
5
4
2
1
3
4
5
6

UMH2
XN4113
XN4213
XN4501
XN4556


5
1
6
4
3
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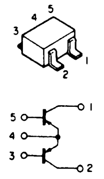
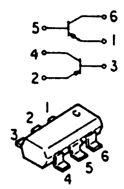
5
4
1
2
3

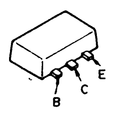
XN1113


4
5
3
2
1
5
1
4
3
2

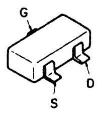
XN6401


5
6
4
1
2
3
2
1
3
6
4
5

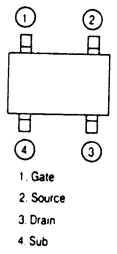
2SB1115A
2SB1122-S
2SD1615A-GP



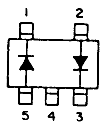
2SK1875-BL/V



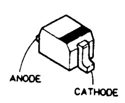
3SK248


①
②
④
③
1. Gate
2. Source
3. Drain
4. Sub

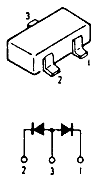
FC806



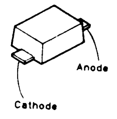
MA110
1SS355


ANODE
CATHODE

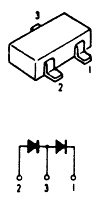
MA141WK
MA152WA
1SS181



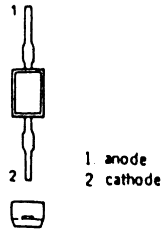
MA728
MA8082-M


Anode
Cathode

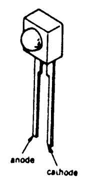
1SS226



TLS221


1
2
1 anode
2 cathode

BR4371F

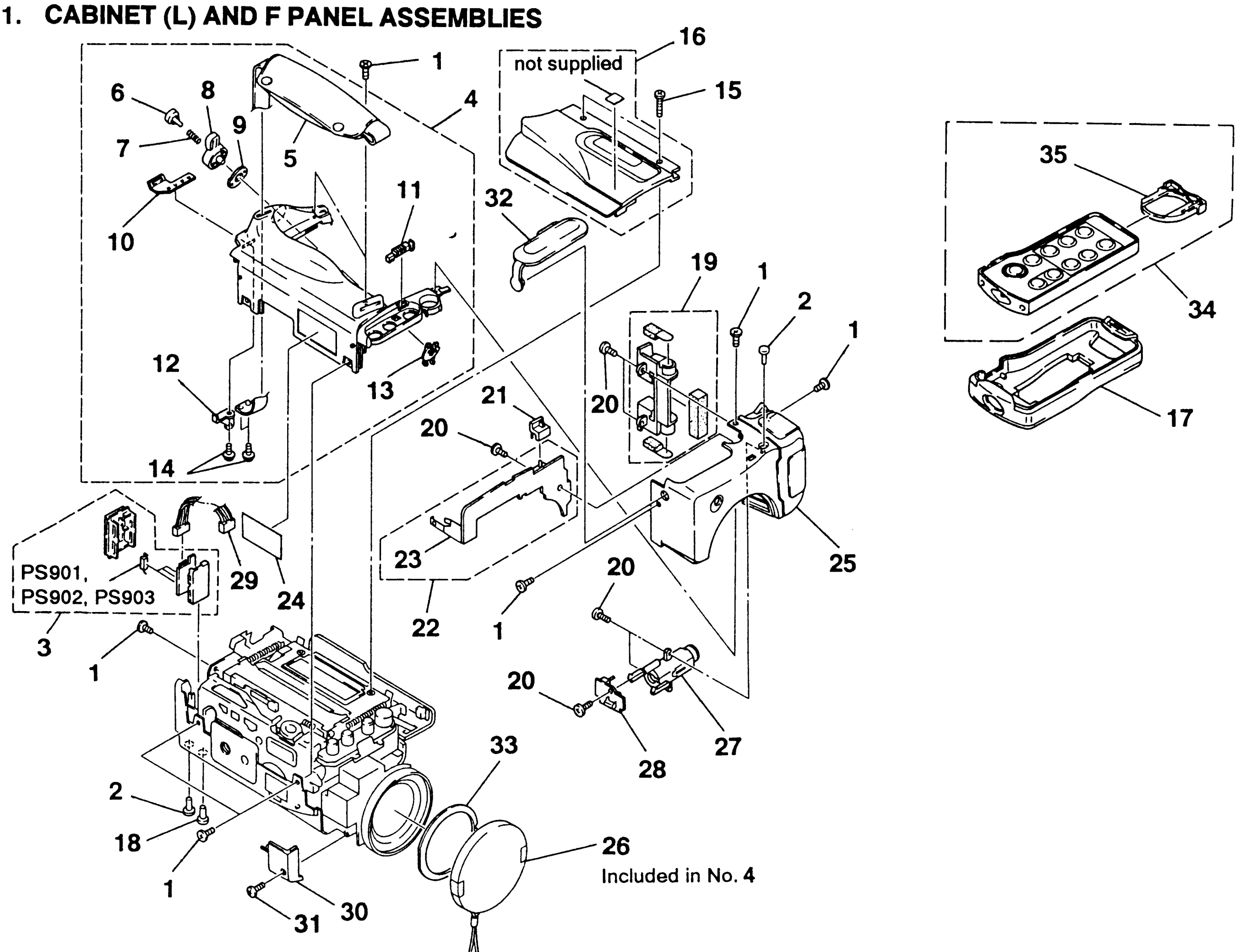

anode
cathode

SECTION 5
EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

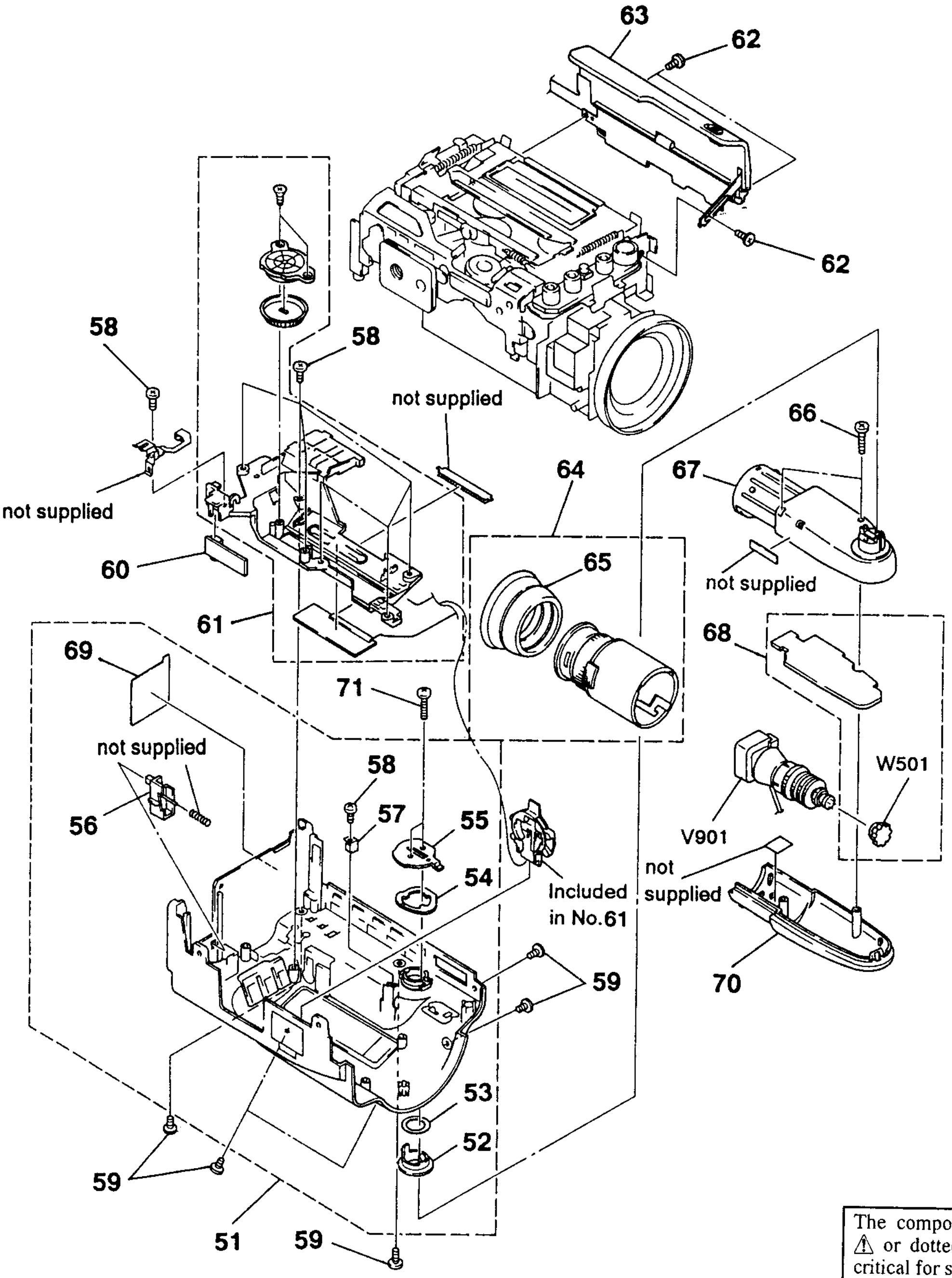
5-1. CABINET (L) AND F PANEL ASSEMBLIES


1
16
not supplied
15
6
8
4
9
7
5
11
32
10
35
19
1
2
34
1
12
17
13
21
20
20
14
PS901,
PS902, PS903
29
24
23
22
20
25
1
3
1
20
27
28
33
2
18
26
Included in No. 4
1
31
30

Ref. No.	Part No.	Description	Remark
1	3-719-381-01	SCREW (M2X4)	
2	3-728-267-01	COVER, 3.5 JACK (MIC, PHONES)	
3	1-537-297-31	TERMINAL BOARD, BATTERY	
4	A-7082-467-A	CABINET (L) BLOCK ASSY	
5	3-736-807-01	BELT, GRIP	
6	3-942-950-01	BUTTON, S/S	
7	3-578-221-00	SPRING, COMPRESSION	
8	3-942-985-01	KNOB, STAND-BY	
9	3-736-364-01	SPRING	
10	3-736-338-01	BRACKET, BELT	
11	3-749-704-01	LID, IN OUT	
12	3-736-360-01	JOINT, LR	
13	3-942-953-01	HOLDER, STAND-BY KNOB	
14	3-669-480-11	+ PTPWH 2	
15	3-727-902-61	SCREW (M1.4X5), SPECIAL	
16	X-3943-065-1	LID ASSY, CASSETTE	
17	3-947-664-11	HOLDER (B), REMOTE CONTROL	
18	3-728-266-01	COVER, 2.5 JACK (REMOTE)	
19	1-542-180-11	MICROPHONE ASSY	
20	3-719-408-01	SCREW (B2), TAPPING, P3	

Ref. No.	Part No.	Description	Remark
21	3-946-477-01	BUTTON, MICROPHONE	
* 22	A-7063-665-A	MA-174P BOARD, COMPLETE	
23	3-947-195-01	PLATE, GROUND, MC	
* 24	3-954-588-01	LABEL, MODEL NUMBER (AEP)	
25	X-3943-067-1	PANEL ASSY, F	
26	X-3941-358-1	CAP ASSY, LENS	
27	X-3941-494-1	CATCHER ASSY (F), RAY	
* 28	A-7071-880-A	RM-68P BOARD, COMPLETE	
29	1-944-055-11	HARNESS (CD-26)	
* 30	X-3941-616-1	COVER ASSY, LOWER, VA	
31	3-947-677-01	SCREW (1.7X4), TAPPING (B)	
32	3-953-695-11	COVER, JACK	
* 33	3-946-907-01	SHEET, NAME RING	
34	1-466-801-11	REMOTE CONTROLLER (CAM CODER)(RMT-508)	
35	3-708-412-01	LID, BATTERY CASE, LITHIUM	
⚠PS901	1-532-841-21	LINK, IC	
⚠PS902	1-532-841-21	LINK, IC	
⚠PS903	1-532-841-21	LINK, IC	

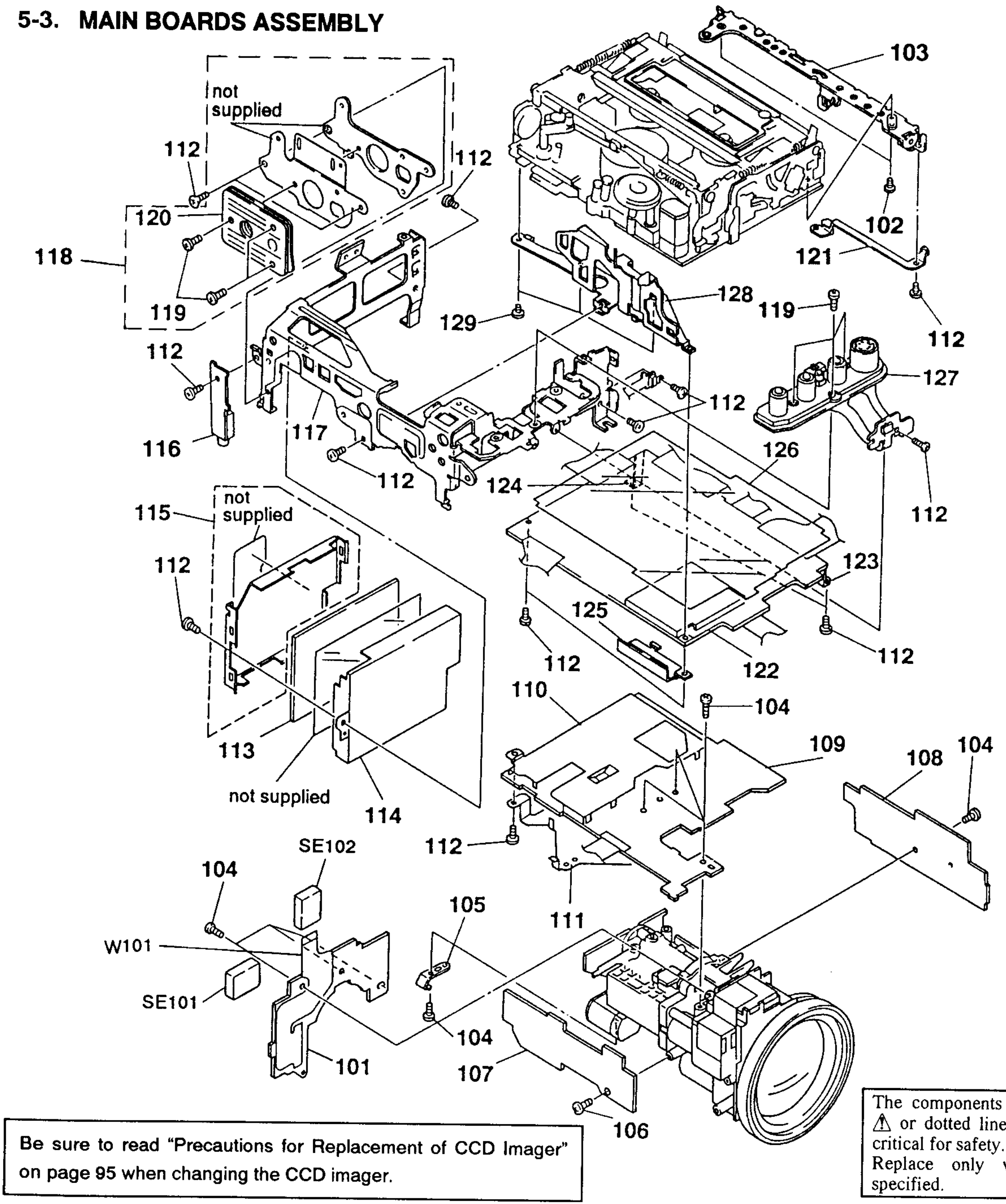
5-2. CABINET (R) ASSEMBLY


63
62
62
58
58
not supplied
not supplied
66
64
67
60
65
not supplied
61
68
69
71
not supplied
58
W501
56
57
55
V901
54
not supplied
Included in No.61
70
59
53
52
59
51
59

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
51	X-3943-066-1	CABINET (R) ASSY	
52	3-747-109-01	SLEEVE, EVF	
53	3-747-112-01	RING, TILT	
54	3-747-110-01	SPRING, LEAF, TILT	
55	3-747-111-01	PLATE, LOCK, TILT	
56	3-747-164-01	LEVER, RELEASE	
57	3-747-178-01	REINFORCEMENT, TILT LOCK	
58	3-719-601-01	SCREW (B2X5), TAPPING	
59	3-719-381-01	SCREW (M2X4)	
* 60	A-7071-879-A	LJ-13P BOARD, COMPLETE	
61	1-466-689-21	SWITCH BLOCK, CONTROL (CF-4)	
62	3-713-786-51	SCREW (M2X3)	
63	1-466-800-11	SWITCH BLOCK, CONTROL (FK-4)	
64	X-3941-603-1	HOLDER ASSY, FINDER	
65	3-946-426-01	EYE CUP	
66	3-713-790-31	SCREW (M2X8), TAPPING, P3	
67	X-3940-706-1	CABINET (L) ASSY, EVF	
* 68	A-7063-220-A	VF-42P BOARD, COMPLETE	
* 69	3-945-964-01	LABEL (U), BATTERY FITTING	
70	3-943-077-01	CABINET (R), EVF	
71	3-740-546-41	SCREW (M2X10)	
⚠V901	1-452-565-11	CRT ASSY (M01KKD70WB)	
⚠W501	1-540-019-21	SOCKET ASSY, CRT	

5-3. MAIN BOARDS ASSEMBLY


103
not supplied
112
112
120
118
119
102
121
128
119
129
112
112
127
112
116
117
126
112
124
not supplied
115
112
123
112
125
112
122
112
110
104
109
104
108
113
not supplied
114
SE102
112
104
105
111
W101
SE101
104
101
107
106

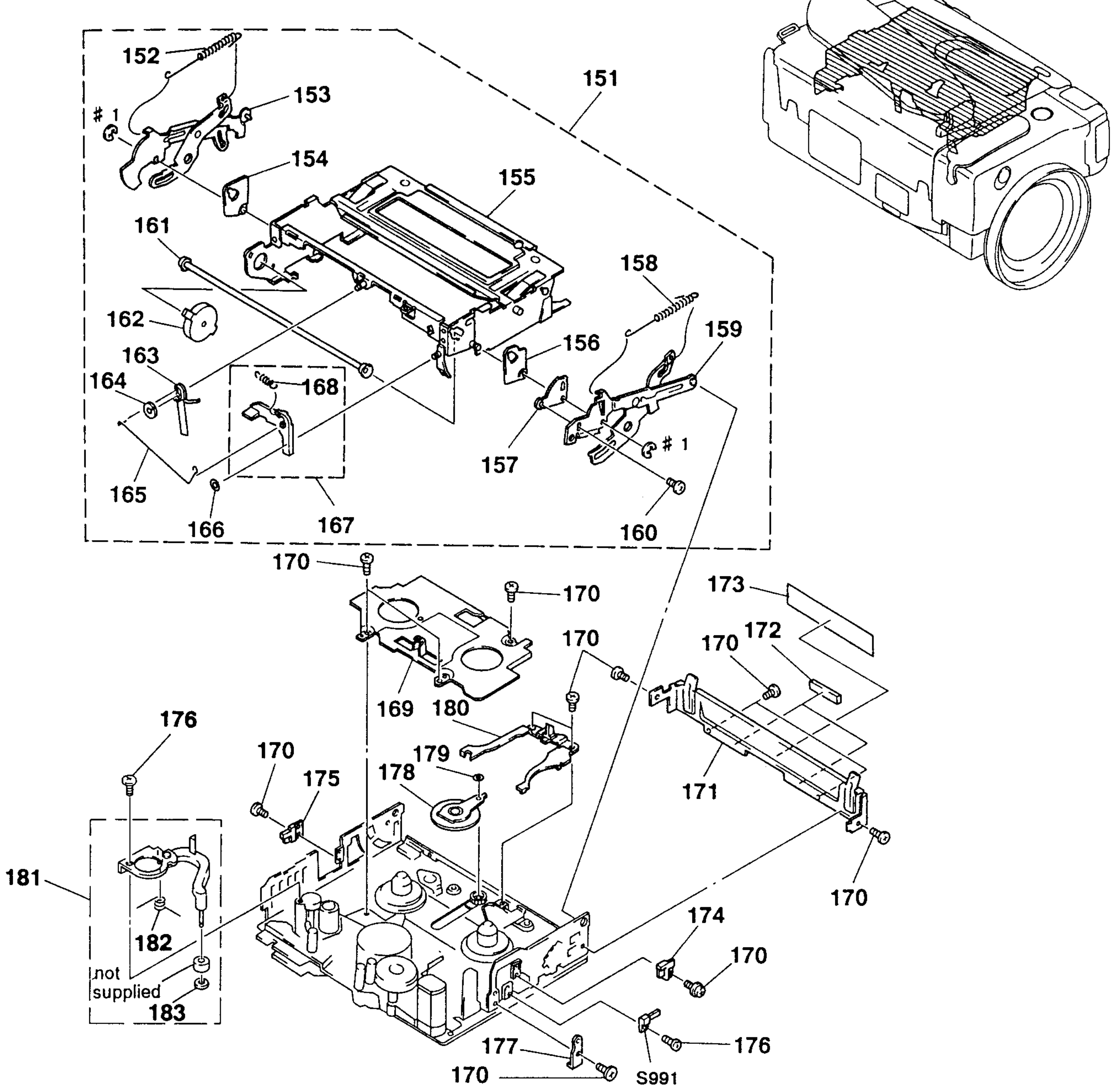
Be sure to read "Precautions for Replacement of CCD Imager" on page 95 when changing the CCD imager.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
* 101	A-7063-663-A	SE-26P BOARD, COMPLETE	
102	3-703-816-41	SCREW (M1.4X2.5), SPECIAL HEAD	
103	3-946-459-01	FRAME (UPPER)	
104	3-719-601-01	SCREW (B2X5), TAPPING	
105	3-946-471-01	BRACKET, LENS	
106	3-947-491-01	SCREW (B) (2X4), TAPPING	
* 107	A-7063-664-A	VD-22P BOARD, COMPLETE	
* 108	A-7063-662-A	AU-151 BOARD, COMPLETE	
* 109	A-7063-661-A	VC-135 BOARD, COMPLETE	
* 110	3-946-451-01	CASE (LOWER), SHIELD, VC	
111	3-947-675-01	HEAT SINK, VC	
112	3-713-786-51	SCREW (M2X3)	
*⚠113	A-7063-659-A	DD-58 BOARD, COMPLETE (DC-DC CONVERTER UNIT)	
114	3-946-454-01	CASE(MAIN), SHIELD, DD CONVERTER	
115	X-3941-749-1	DD CONVERTER (LID) ASSY	

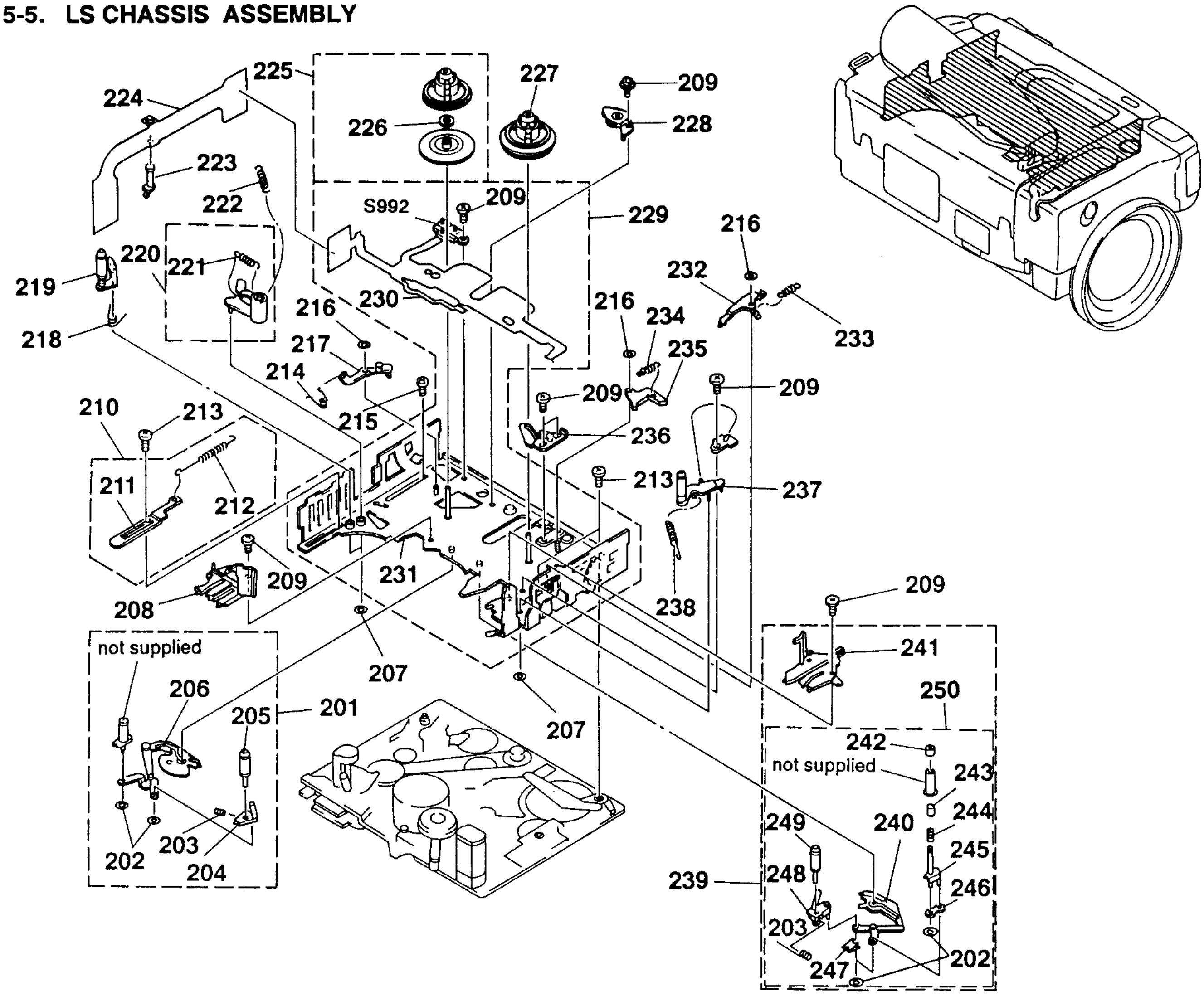
Ref. No.	Part No.	Description	Remark
* 116	A-7071-878-A	HJ-14P BOARD, COMPLETE	
117	X-3941-343-1	FRAME ASSY, MD	
118	X-3941-345-1	FRAME ASSY, TRIPOD	
119	3-719-381-01	SCREW (M2X4)	
120	3-736-396-51	SCREW, TRIPOD	
121	3-946-461-01	REINFORCEMENT, VF	
* 122	A-7063-660-A	VS-101 BOARD, COMPLETE	
* 123	3-946-456-01	PLATE (L), GROUND, VS	
* 124	3-942-939-01	PLATE (R), GROUND, VS	
* 125	3-942-936-01	SHIELD, RP CONNECTOR	
126	3-946-457-01	SHEET, HEAT INSULATING, VS	
127	1-537-407-21	TERMINAL BOARD (JACK BOARD)	
128	X-3941-344-1	FRAME (LOWER) ASSY	
SE101	1-810-024-11	SENSOR, ANGULAR VELOCITY (YS)	
SE102	1-810-024-21	SENSOR, ANGULAR VELOCITY (PS)	
W101	1-642-239-11	FP-486 FLEXIBLE BOARD	

5-4. CASSETTE COMPARTMENT HOLDER ASSEMBLY


152
153
# 1
151
154
155
161
158
162
159
163
156
164
168
165
157
# 1
166
167
160
170
170
173
170
170
172
169
180
176
170
179
175
178
171
181
170
174
182
170
not supplied
183
177
176
170
S991

Ref. No.	Part No.	Description	Remark
151	A-7040-256-A	HOLDER BLOCK ASSY (4)	
152	3-739-872-01	SPRING, TENSION	
153	X-3940-718-1	ARM (T) ASSY (4), F	
154	3-728-145-01	BEARING (T), MIDWAY GEAR	
155	X-3940-719-1	HOLDER ASSY (4)	
156	3-728-146-01	BEARING (S), MIDWAY GEAR	
157	3-739-808-01	PLATE (2), ADJUSTMENT, C ARM	
158	3-739-873-01	SPRING, TENSION	
159	X-3940-717-1	ARM (S) ASSY (4), F	
160	3-728-126-01	SCREW (M1.4X2), SPECIAL HEAD	
161	X-3727-920-1	GEAR ASSY, MIDWAY	
162	X-3739-809-1	DAMPER ASSY (2)	
163	X-3940-991-1	PROTECTOR ASSY (2), T	
164	3-749-304-01	WASHER, STOPPER	
165	3-728-277-01	BAR, JOINT	
166	3-331-007-11	WASHER	
167	A-7040-164-A	ARM BLOCK ASSY, TP	
168	3-509-127-00	SPRING, TENSION	
169	3-951-964-01	BASE, LED	
170	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
171	3-943-055-01	FRAME (L), LS	
* 172	3-736-841-02	SPACER, FK	
173	3-943-701-01	LABEL, CAUTION	
174	3-727-957-01	HOLDER (S), SENSOR	
175	3-727-954-01	HOLDER (T), SENSOR	
176	3-728-148-11	SCREW (M1.4X2.5), SPECIAL HEAD	
177	3-727-946-01	SUPPORT, LS	
178	X-3727-926-1	ARM ASSY, GEAR	
179	3-315-414-31	WASHER	
180	X-3940-087-1	BASE ASSY, RL	
181	A-7040-264-D	ROLLER BLOCK ASSY, HC	
182	3-943-439-02	SPRING, TORSION	
183	3-321-393-11	WASHER, STOPPER	
S991	1-572-611-11	SWITCH, LEAF (C LOCK)	

5-5. LS CHASSIS ASSEMBLY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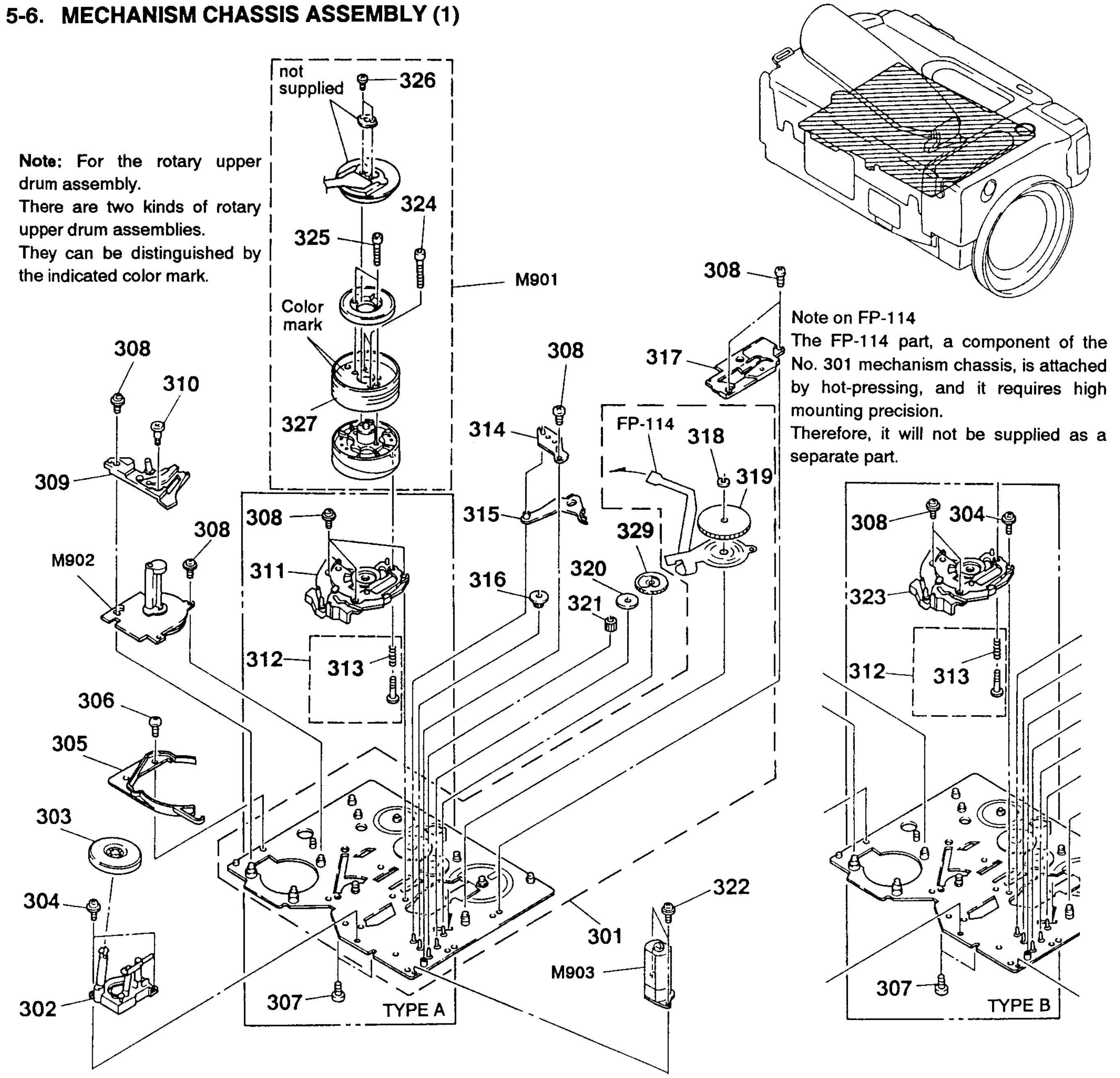
Ref. No.	Part No.	Description	Remark
201	A-7040-148-A	ARM (T) BLOCK ASSY, GUIDE	
202	3-331-007-11	WASHER	
203	3-728-290-01	SCREW (M1.2)	
204	X-3727-947-1	BASE ASSY, TG7	
205	X-3727-994-1	ROLLER ASSY, TG8	
206	X-3727-940-1	ARM (T) ASSY, GUIDE	
207	3-315-414-31	WASHER	
208	3-728-244-01	RAIL (T), GUIDE	
209	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
210	A-7040-150-A	SLIDER BLOCK ASSY, CAM	
211	3-728-089-01	SLIDER, CAM	
212	3-727-936-01	SPRING, TENSION	
213	3-941-601-01	SCREW (M1.4X2.5), SPECIAL HEAD	
214	3-732-068-01	SPRING (JD), RATCHET	
215	3-732-085-01	SCREW (1.2X1.6), SPECIAL HEAD	
216	3-728-091-01	WASHER, STOPPER	
217	X-3728-005-1	RATCHET ASSY (JD), T	
218	3-727-939-01	SPRING (JD), TORSION	
219	A-7040-151-A	ARM BLOCK ASSY, TG11	
220	A-7040-240-A	ARM BLOCK ASSY (JD), PINCH	
221	3-727-927-01	SPRING (POWER TENSION),TENSION	
222	3-732-089-03	SPRING (JD), TENSION	
223	3-739-807-01	SHAFT (2), FLEXIBLE ROTARY	
224	1-639-334-11	FP-422 FLEXIBLE BOARD	
225	X-3727-951-2	TABLE ASSY, REEL, TAKE-UP	
226	3-701-439-11	WASHER	
227	X-3727-952-1	TABLE ASSY, REEL, SUPPLY	
228	X-3727-914-4	CLUTCH ASSY, ONEWAY	
229	A-7010-365-A	MD ASSY (1)	
230	A-7062-792-A	FP-423 BLOCK ASSY	
231	X-3940-186-1	CHASSIS ASSY (S), LS	
232	3-732-077-01	RATCHET (JD), S	
233	3-732-076-02	SPRING (JD), TENSION	
234	3-732-078-02	SPRING (JD), TENSION	
235	3-732-079-01	ARM (JD), S SOFT	
236	3-728-206-01	PLATE, CAM, LS	
237	X-3749-001-1	ARM ASSY (JD), TG1	
238	3-940-616-03	SPRING (JD), TENSION	
239	A-7040-263-A	RAIL(S)BLOCK ASSY(3)(JD),GUIDE	
240	X-3727-941-1	ARM (S) ASSY, GUIDE	
241	3-728-226-01	RAIL (S) (JD), GUIDE	
242	3-943-822-01	FLANGE (P), TG4 UPPER	
243	3-728-048-01	SLEEVE, TG4	
244	3-728-023-01	SPRING, COMPRESSION	
245	X-3727-936-2	BASE ASSY, TG4	
246	3-728-053-01	PLATE, UNDER, TG4	
247	3-728-062-01	SPRING (6GB), LEAF	
248	X-3727-948-1	BASE ASSY, TG6	
249	X-3940-733-1	ROLLER ASSY (3), TG5	
250	A-7040-262-C	ARM (S) BLOCK ASSY (3), GUIDE	
S992	1-572-802-12	SWITCH, PUSH (3 KEY) (REC PROOF, ME/MP, Hi-8 MP)	

5-6. MECHANISM CHASSIS ASSEMBLY (1)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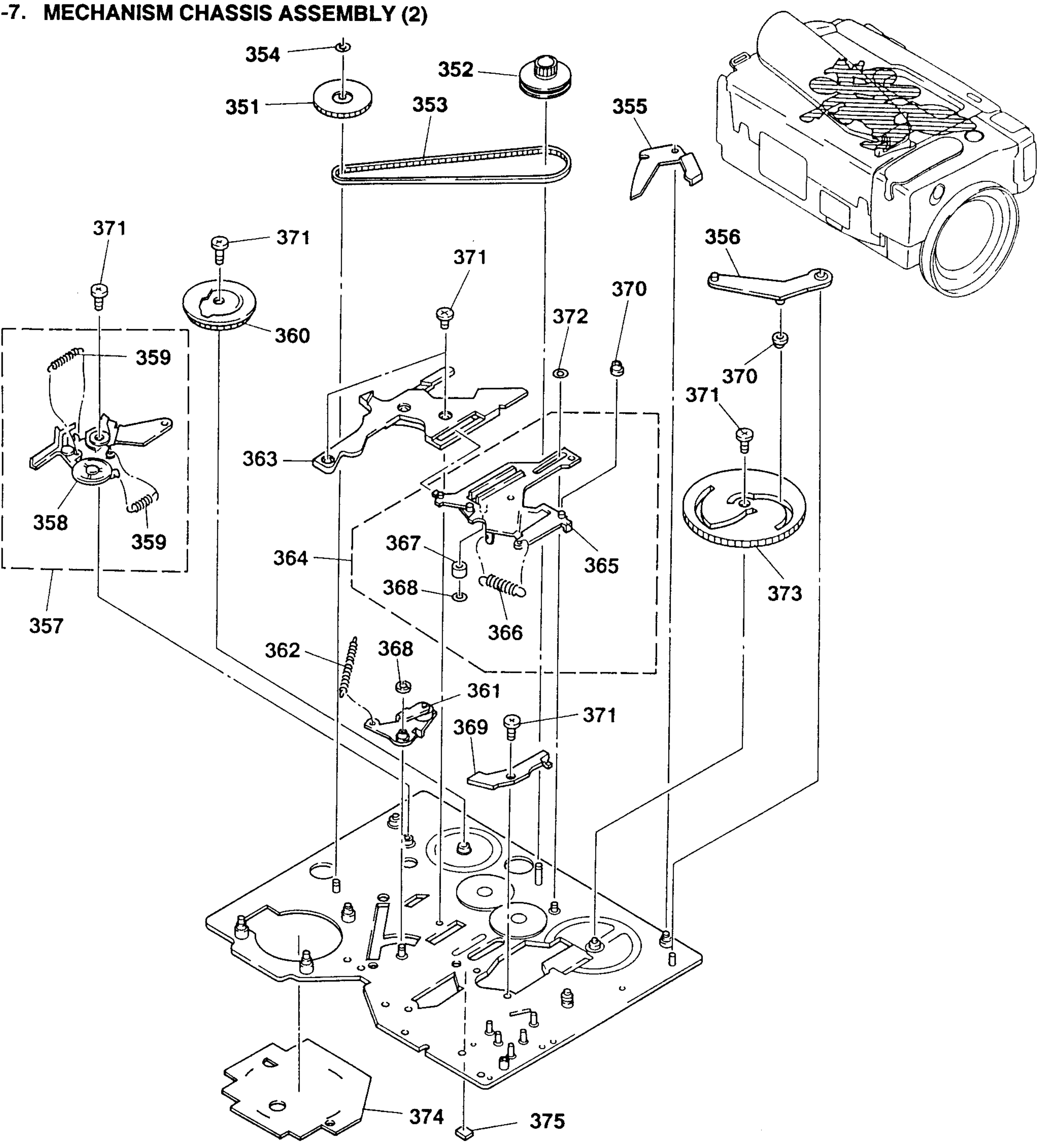
TYPE B

Note: For the rotary upper drum assembly.
There are two kinds of rotary upper drum assemblies.
They can be distinguished by the indicated color mark.

Note on FP-114
The FP-114 part, a component of the No. 301 mechanism chassis, is attached by hot-pressing, and it requires high mounting precision.
Therefore, it will not be supplied as a separate part.

Ref. No.	Part No.	Description	Remark
301	A-7040-154-P	CHASSIS ASSY, MECHANICAL	
302	A-7040-251-F	BASE (1) BLOCK ASSY (3), RAIL	
303	3-943-088-01	WHEEL, FLY, IP	
304	3-703-816-51	SCREW (M1.4X3.5), SPECIAL HEAD	
305	3-732-064-01	COVER, ROTOR	
306	3-728-126-01	SCREW (M1.4X2), SPECIAL HEAD	
307	3-728-108-01	SCREW (M1.4X4.5)	
308	3-728-148-11	SCREW (M1.4X2.5), SPECIAL HEAD	
309	X-3941-027-2	RAIL (BASE) (3) ASSY (3),GUIDE	
310	3-732-084-01	SCREW (M1.4), SPECIAL HEAD	
* 311	A-7040-222-D	BASE (M) BLOCK ASSY, DRUM (TYPE A)	
312	X-3728-009-2	SCREW ASSY, FITTING	
313	3-743-633-01	SPRING, COMPRESSION	
314	3-728-119-01	RETAINER, GEAR	
315	X-3727-906-1	ARM ASSY	
316	X-3727-903-1	GEAR ASSY, NO.1	
317	3-728-231-06	BASE, TG-1 CAM	
318	3-579-788-01	WASHER, STOPPER	
319	X-3727-915-1	GEAR ASSY, MODE	
320	X-3727-904-1	GEAR ASSY, NO.2	
321	3-728-149-01	GEAR, NO.0	
322	3-732-087-31	SCREW (M1.4X1.8), SPECIAL HEAD	
* 323	A-7040-203-G	BASE (A) BLOCK ASSY, DRUM (TYPE B)	
324	3-727-809-01	BOLT (M1.4X5), HEXAGON SOCKET	
325	3-727-807-01	BOLT (M1.7X3.3), HEXAGON SOCKET	
326	3-728-108-41	SCREW (M1.4X2.7)	
327	A-7049-461-A	DRUM ASSY, UPPER, ROTARY (DGR-80-R-(1)) (COLOR MARK; GREEN, GREEN/RED, BLACK, BLACK/RED)	
327	A-7049-464-A	DRUM ASSY, UPPER, ROTARY (DGR-80-R-(2)) (COLOR MARK; RED, RED/RED, BLUE, BLUE/RED)	
329	3-728-189-02	GEAR, NO.3	
M901	A-7048-653-A	DRUM BLOCK ASSY (DGH-80D-R)	
M902	8-835-329-12	MOTOR, DC U-21A (CAPSTAN)	
M903	1-541-607-21	MOTOR, DC (LA12G-344VA)(LOADING)	

5-7. MECHANISM CHASSIS ASSEMBLY (2)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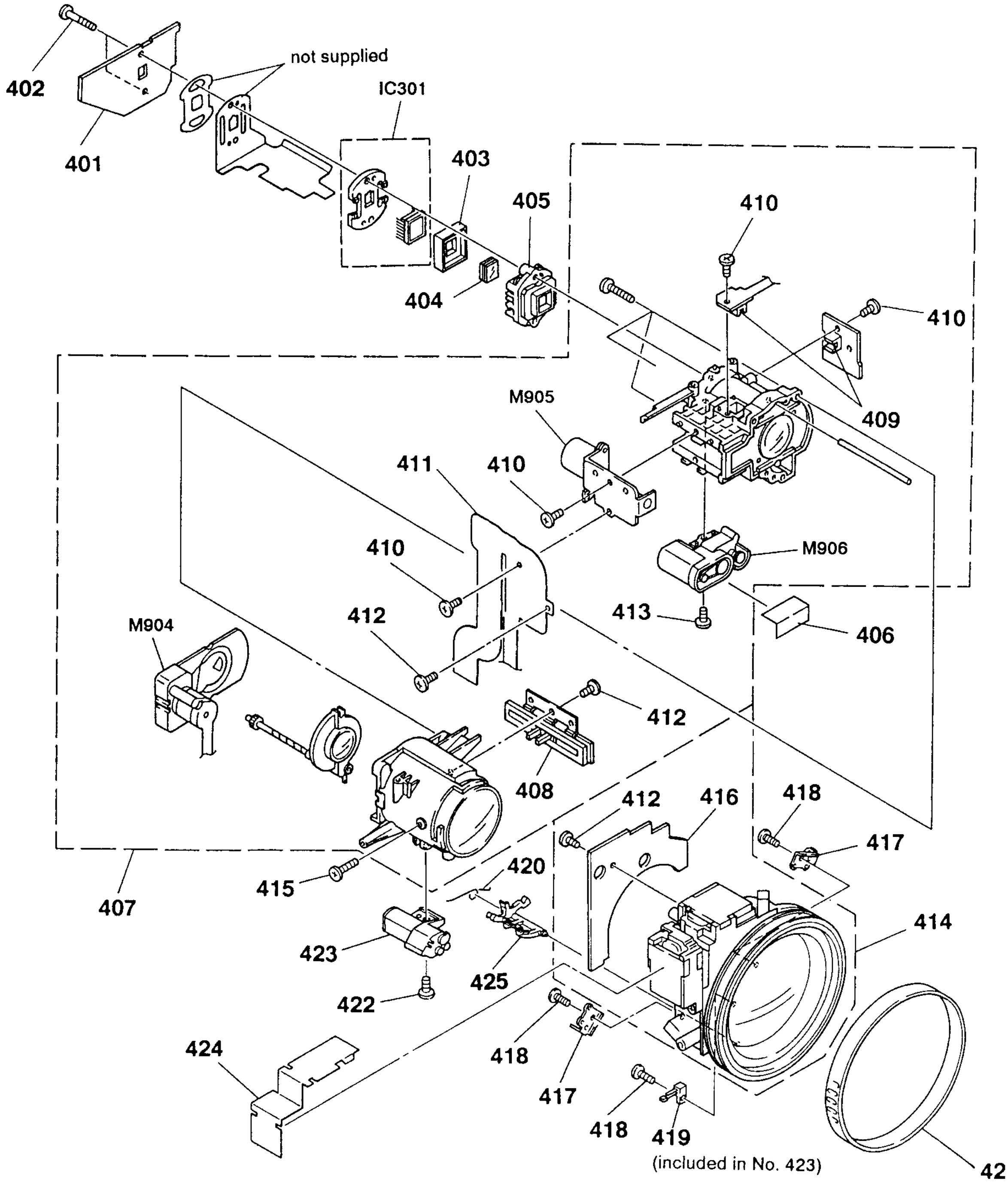
Ref. No.	Part No.	Description	Remark
351	X-3727-930-1	GEAR ASSY, CONVERSION	
352	X-3727-931-1	PULLEY ASSY, MIDWAY	
353	3-728-212-01	BELT, RELAY	
354	3-728-091-01	WASHER, STOPPER	
355	3-728-154-01	ARM, EJ	
356	3-941-980-01	ARM (T), LS	
357	A-7040-152-A	ARM BLOCK ASSY, PINCH PRESS	
358	X-3940-335-1	ARM ASSY, PINCH PRESS	
359	3-728-065-01	SPRING, TENSION	
360	3-728-190-01	CAM (B)	
361	X-3727-924-2	ARM ASSY, GUIDE LOCK	
362	3-728-015-01	SPRING (POWER TENSION), TENSION	
363	3-728-228-03	SUPPORT (T), GL	
364	A-7040-153-A	SLIDER BLOCK ASSY, GL	
365	X-3941-931-1	SLIDER ASSY, GL	
366	3-727-929-01	SPRING (POWER TENSION), TENSION	
367	3-728-144-01	ROLLER, GL	
368	3-331-007-11	WASHER	
369	3-728-213-01	SUPPORT (S), GL	
370	3-728-109-01	ROLLER, LS	
371	3-728-148-11	SCREW (M1.4X2.5), SPECIAL HEAD	
372	3-315-384-31	WASHER, STOPPER	
373	3-728-208-02	CAM (A)	
374	3-942-901-01	COVER (L), CAPSTAN	
375	3-743-634-01	SPACER, RUBBER	

5-8. CCD ASSEMBLY AND ZOOM LENS (VCL-6210WB) ASSEMBLY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Ref. No.	Part No.	Description	Remark
* 401	A-7071-877-A	CD-108P BOARD, COMPLETE	
402	3-947-268-01	SCREW (B TIGHT) (2), TAPPING	
403	3-946-857-11	RUBBER (S), SEAL	
404	1-547-529-21	FILTER BLOCK, OPTICAL (OFB-03-03)	
405	3-946-856-11	ADAPTOR (H), CCD FITTING	
* 406	3-948-061-01	COVER, Z GEAR	
407	3-708-436-01	LENS BLOCK	
408	3-708-446-01	METER, POTENTIAL	
409	3-708-435-01	PHOTO INTERRUPTER	
410	3-707-946-01	SCREW	
411	3-708-441-01	FLEXIBLE	
412	3-708-053-01	SCREW, FB FITTING	
413	3-708-450-01	SCREW, PZ	
414	3-708-437-01	VAP BLOCK	
415	3-708-449-01	SCREW, VAP FITTING	
416	3-708-440-01	CS BOARD	
417	3-708-438-01	BRACKET	
418	3-707-947-01	SCREW, METER LENS	
419	3-708-447-01	SWITCH, LEAF	
420	3-708-448-01	SP, MECHANICAL LOCK	
421	3-708-439-01	KNURL, (F) RUBBER	
422	3-708-249-01	SCREW AF BLOCK	
423	3-708-444-01	MOTOR ASSY, INITIALIZE	
424	3-947-593-01	COVER, ACTUATOR	
425	3-708-561-01	LEVER, LOCK	
IC301	A-7030-371-A	CCD ASSY (059 SERVICE)(CCD IMAGER)	
M904	3-708-445-01	METER, IG (IRIS)	
M905	3-708-443-01	MOTOR ASSY, STEPPING (FOCUS)	
M906	3-708-442-01	MOTOR ASSY, PZ (ZOOM)	

AU-151

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- Hardware (# mark) list is given in the last of this parts list.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

Ref. No.	Part No.	Description			Remark
*	A-7063-662-A	AU-151 BOARD, COMPLETE **********************			
		(Ref. No. 6,000 Series)			
		< CAPACITOR >			
C601	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C602	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C603	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C605	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C606	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C607	1-128-003-11	ELECT CHIP	22uF	20%	4V
C608	1-128-003-11	ELECT CHIP	22uF	20%	4V
C609	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C610	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C611	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V
C612	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C613	1-126-607-11	ELECT CHIP	47uF	20%	4V
C614	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C615	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V
C616	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C617	1-126-395-11	ELECT	22uF	20%	16V
C618	1-128-008-11	ELECT CHIP	3.3uF	20%	35V
C619	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C620	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V
C622	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C623	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V
C624	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V
C625	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C626	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C627	1-128-004-11	ELECT CHIP	10uF	20%	16V
C628	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C629	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V
C630	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V
C631	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C632	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C633	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C634	1-128-006-11	ELECT CHIP	4.7uF	20%	25V
C635	1-135-210-11	TANTALUM CHIP	4.7uF	20%	10V
C636	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C637	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C638	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C639	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C640	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C641	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C643	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C644	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C645	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C646	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C647	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C648	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C649	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C650	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C651	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C653	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C654	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C655	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C656	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C657	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C658	1-162-974-11	CERAMIC CHIP	0.01uF		50V
		< CONNECTOR >			
CN601	1-691-551-11	PIN, CONNECTOR (SMD) 8P			
CN602	1-580-056-21	PIN, CONNECTOR 3P			
CN603	1-580-252-31	CONNECTOR, BOARD TO BOARD 30P			
		< DIODE >			
D601	8-719-404-46	DIODE MA110			
D602	8-719-420-14	DIODE MA8082-M			
D603	8-719-420-14	DIODE MA8082-M			
D604	8-719-404-46	DIODE MA110			
D605	8-719-404-46	DIODE MA110			
D606	8-719-404-35	DIODE MA141WK			
D607	8-719-404-35	DIODE MA141WK			
D608	8-719-420-14	DIODE MA8082-M			
D609	8-719-420-14	DIODE MA8082-M			
		< FILTER >			
FL601	1-236-837-21	FILTER, BAND PASS			
FL602	1-236-838-21	FILTER, BAND PASS			
		< IC >			
IC601	8-759-159-94	IC LA7491W-TBM			
		< TRANSISTOR >			
Q601	8-729-020-75	TRANSISTOR 2SC4998			
Q602	8-729-020-75	TRANSISTOR 2SC4998			
Q603	8-729-421-90	TRANSISTOR XN4113			

Ref.No.	Part No.	Description				Remark
Q604	8-729-402-81	TRANSISTOR	XN4501			
Q605	8-729-420-20	TRANSISTOR	XN4312			
Q606	8-729-010-60	TRANSISTOR	MSA1586-BC			
Q608	8-729-402-81	TRANSISTOR	XN4501			
Q610	8-729-402-42	TRANSISTOR	UN5213			
Q611	8-729-403-35	TRANSISTOR	UN5113			
Q612	8-729-402-42	TRANSISTOR	UN5213			
Q613	8-729-020-75	TRANSISTOR	2SC4998			
Q614	8-729-020-75	TRANSISTOR	2SC4998			

< RESISTOR >

Ref.No.	Part No.	Description				Remark
R601	1-216-817-11	METAL CHIP	470	5%	1/16W	
R602	1-216-817-11	METAL CHIP	470	5%	1/16W	
R605	1-216-810-11	METAL CHIP	120	5%	1/16W	
R606	1-216-810-11	METAL CHIP	120	5%	1/16W	
R607	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R608	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R609	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R610	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R611	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R612	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R613	1-216-817-11	METAL CHIP	470	5%	1/16W	
R614	1-216-817-11	METAL CHIP	470	5%	1/16W	
R615	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R616	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R617	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R618	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R620	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R622	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R623	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R624	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R625	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R626	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R627	1-216-863-11	METAL GLAZE	3.3M	5%	1/16W	
R628	1-216-863-11	METAL GLAZE	3.3M	5%	1/16W	
R630	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R631	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R632	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R633	1-216-820-11	METAL CHIP	820	5%	1/16W	
R634	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R635	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R637	1-216-864-11	METAL CHIP	0	5%	1/16W	
R640	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R641	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R642	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R645	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R646	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R647	1-216-864-11	METAL CHIP	0	5%	1/16W	
R648	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R650	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R651	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R652	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R654	1-216-864-11	METAL CHIP	0	5%	1/16W	
R656	1-216-295-00	METAL CHIP	0	5%	1/10W	
R657	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R658	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R660	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R661	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R662	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R663	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R664	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R665	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R666	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R667	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R668	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R670	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R671	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R672	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R673	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R674	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R675	1-216-821-11	METAL CHIP	1K	5%	1/16W	

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* A-7071-877-A CD-108P BOARD, COMPLETE

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(Ref.No. 1,000 Series)

< CAPACITOR >

Ref.No.	Part No.	Description				Remark
C301	1-128-006-11	ELECT CHIP	4.7uF	20%	25V	
C302	1-128-013-11	ELECT CHIP	1uF	20%	50V	
C303	1-128-008-11	ELECT CHIP	3.3uF	20%	35V	
C305	1-162-637-11	CERAMIC CHIP	0.47uF		16V	
C306	1-126-607-11	ELECT CHIP	47uF	20%	4V	
C307	1-128-004-11	ELECT CHIP	10uF	20%	16V	
C308	1-128-013-11	ELECT CHIP	1uF	20%	50V	
C309	1-162-974-11	CERAMIC CHIP	0.01uF		50V	
C310	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C312	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V	

< CONNECTOR >

Ref.No.	Part No.	Description	Remark
CN301	1-573-525-21	CONNECTOR, BOARD TO BOARD 16P	

< DIODE >

Ref.No.	Part No.	Description		Remark
D301	8-719-820-05	DIODE	1SS181	
D302	8-719-800-76	DIODE	1SS226	
D303	8-719-820-05	DIODE	1SS181	

< COIL >

Ref.No.	Part No.	Description		Remark
L301	1-412-032-11	INDUCTOR CHIP	100uH	

Ref. No.	Part No.	Description			Remark
		< TRANSISTOR >			
Q301	8-729-010-75	TRANSISTOR MSC4116-B/C			
Q302	8-729-903-10	TRANSISTOR FMW1			
Q303	8-729-232-86	TRANSISTOR 2SK1875			
		< RESISTOR >			
R301	1-216-845-11	METAL CHIP	100K	5%	1/16W
R302	1-216-857-11	METAL CHIP	1M	5%	1/16W
R303	1-216-840-11	METAL CHIP	39K	5%	1/16W
R304	1-216-843-11	METAL CHIP	68K	5%	1/16W
R305	1-216-845-11	METAL CHIP	100K	5%	1/16W
R306	1-216-820-11	METAL CHIP	820	5%	1/16W
R307	1-216-835-11	METAL CHIP	15K	5%	1/16W
R308	1-216-850-11	METAL CHIP	270K	5%	1/16W
R309	1-216-833-11	METAL CHIP	10K	5%	1/16W
R310	1-216-809-11	METAL CHIP	100	5%	1/16W
R311	1-216-828-11	METAL CHIP	3.9K	5%	1/16W

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*⚠ A-7063-659-A DD-58 BOARD, COMPLETE

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(Ref.No. 9,000 Series)

Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
C230	1-128-530-11	ELECT CHIP	33uF	20%	10V
C231	1-126-204-11	ELECT CHIP	47uF	20%	16V
C232	1-128-065-11	ELECT	68uF	20%	10V
C233	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C234	1-163-119-00	CERAMIC CHIP	120PF	5%	50V
C235	1-126-204-11	ELECT CHIP	47uF	20%	16V
C236	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C237	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C238	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C239	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C240	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C241	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C242	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C243	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C244	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C245	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C246	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C247	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C248	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C249	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C250	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C252	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C253	1-164-836-11	CERAMIC CHIP	6.8uF		16V
C254	1-164-830-11	CERAMIC CHIP	1uF	22%	16V
C255	1-164-836-11	CERAMIC CHIP	6.8uF		16V
C256	1-164-836-11	CERAMIC CHIP	6.8uF		16V
C257	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C258	1-164-836-11	CERAMIC CHIP	6.8uF		16V
C259	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C970	1-128-530-11	ELECT CHIP	33uF	20%	10V
C971	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C972	1-164-830-11	CERAMIC CHIP	1uF	22%	16V
C973	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C974	1-164-830-11	CERAMIC CHIP	1uF	22%	16V
C975	1-127-558-11	ELECT(SOLID)	10uF	20%	10V
C976	1-127-558-11	ELECT(SOLID)	10uF	20%	10V
C977	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C978	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C979	1-164-830-11	CERAMIC CHIP	1uF	22%	16V
C980	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C981	1-164-830-11	CERAMIC CHIP	1uF	22%	16V
C982	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C983	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C984	1-164-836-11	CERAMIC CHIP	6.8uF		16V
C985	1-164-836-11	CERAMIC CHIP	6.8uF		16V
C986	1-164-830-11	CERAMIC CHIP	1uF	22%	16V
C987	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C988	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C989	1-164-830-11	CERAMIC CHIP	1uF	22%	16V
C990	1-164-337-11	CERAMIC CHIP	2.2uF		16V
C991	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C992	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C993	1-128-530-11	ELECT CHIP	33uF	20%	10V
C996	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
		< CONNECTOR >			
CN231	1-691-588-11	PIN, CONNECTOR (1.5MM)(SMD) 5P			
CN232	1-691-534-11	CONNECTOR, BOARD TO BOARD 20P			
CN233	1-691-538-11	CONNECTOR, BOARD TO BOARD 28P			
		< DIODE >			
D231	8-719-989-33	DIODE FC806			
		< IC >			
IC231	8-759-035-98	IC MC141600FU			
IC232	8-759-035-98	IC MC141600FU			
		< COIL >			
L231	1-424-519-21	COIL, MOLD CHOKE	1.0uH		
L234	1-424-519-21	COIL, MOLD CHOKE	1.0uH		
L235	1-424-520-21	COIL, MOLD CHOKE	4.7uH		
L236	1-424-520-21	COIL, MOLD CHOKE	4.7uH		
L237	1-424-520-21	COIL, MOLD CHOKE	4.7uH		
L238	1-424-524-21	COIL, CHOKE	47uH		
L239	1-424-524-21	COIL, CHOKE	47uH		

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description	Remark
L240	1-424-524-21	COIL, CHOKE 47uH	
L241	1-412-030-11	INDUCTOR CHIP 22uH	
L242	1-412-027-11	INDUCTOR CHIP 2.2uH	
L243	1-424-523-21	COIL, CHOKE 22uH	
L244	1-424-523-21	COIL, CHOKE 22uH	
L245	1-412-034-11	INDUCTOR CHIP 330uH	
L246	1-412-034-11	INDUCTOR CHIP 330uH	
L247	1-412-028-11	INDUCTOR CHIP 4.7uH	
L248	1-412-030-11	INDUCTOR CHIP 22uH	
L249	1-424-522-21	COIL, CHOKE 10uH	
L250	1-412-027-11	INDUCTOR CHIP 2.2uH	
L251	1-412-030-11	INDUCTOR CHIP 22uH	

< TRANSISTOR >

Ref.No.	Part No.	Description	Remark
Q231	8-729-823-93	TRANSISTOR FC150	
Q232	8-729-823-95	TRANSISTOR FC149	
Q233	8-729-823-84	TRANSISTOR FP102	
Q234	8-729-823-82	TRANSISTOR FP101	
Q235	8-729-823-82	TRANSISTOR FP101	
Q236	8-729-804-41	TRANSISTOR 2SB1122-S	
Q237	8-729-823-84	TRANSISTOR FP102	
Q238	8-729-823-84	TRANSISTOR FP102	
Q239	8-729-823-93	TRANSISTOR FC150	
Q240	8-729-901-06	TRANSISTOR DTA144EK	

< RESISTOR >

Ref.No.	Part No.	Description	Remark
R231	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R232	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R233	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R234	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R235	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R236	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R237	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R238	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R239	1-218-883-11	METAL CHIP 33K 0.50% 1/16W	
R240	1-218-883-11	METAL CHIP 33K 0.50% 1/16W	
R241	1-218-881-11	METAL CHIP 27K 0.50% 1/16W	
R242	1-216-855-11	METAL CHIP 680K 5% 1/16W	
R243	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R244	1-218-881-11	METAL CHIP 27K 0.50% 1/16W	
R245	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R246	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R247	1-218-885-11	METAL CHIP 39K 0.50% 1/16W	
R248	1-218-885-11	METAL CHIP 39K 0.50% 1/16W	
R249	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R250	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R251	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R252	1-216-850-11	METAL CHIP 270K 5% 1/16W	
R253	1-218-875-11	METAL CHIP 15K 0.50% 1/16W	
R254	1-218-895-11	METAL CHIP 100K 0.50% 1/16W	
R255	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R256	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R257	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R258	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R259	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R381	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R382	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R383	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R971	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R972	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R973	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R974	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R975	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R976	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R977	1-218-881-11	METAL CHIP 27K 0.50% 1/16W	
R978	1-216-820-11	METAL CHIP 820 5% 1/16W	
R979	1-218-885-11	METAL CHIP 39K 0.50% 1/16W	
R980	1-216-033-00	METAL CHIP 220 5% 1/10W	
R981	1-216-033-00	METAL CHIP 220 5% 1/10W	
R982	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R984	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R985	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R986	1-216-852-11	METAL CHIP 390K 5% 1/16W	
R987	1-216-850-11	METAL CHIP 270K 5% 1/16W	
R988	1-216-033-00	METAL CHIP 220 5% 1/10W	
R989	1-216-033-00	METAL CHIP 220 5% 1/10W	
R990	1-218-883-11	METAL CHIP 33K 0.50% 1/16W	
R991	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R992	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R993	1-216-033-00	METAL CHIP 220 5% 1/10W	
R994	1-216-033-00	METAL CHIP 220 5% 1/10W	
R995	1-216-009-00	METAL CHIP 22 5% 1/10W	
R996	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R997	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	

< VARIABLE RESISTOR >

Ref.No.	Part No.	Description	Remark
RV231	1-238-858-11	RES, ADJ, CERMET 47K	
RV232	1-238-857-11	RES, ADJ, CERMET 22K	

< TRASFORMER >

Ref.No.	Part No.	Description	Remark
T231	1-450-785-21	TRANSFORMER, CONVERTER	

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* A-7062-792-A FP-423 BLOCK ASSY (Ref.No. 4000 Series)
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Ref.No.	Part No.	Description	Remark
	3-727-954-01	HOLDER (T), SENSOR	
	3-727-957-01	HOLDER (S), SENSOR	
	3-732-046-01	HOLDER, LED	

Ref. No.	Part No.	Description	Remark
		< DIODE >	
D991	8-719-988-42	DIODE GL453S	
		< HALL ELEMENT>	
H991	1-808-448-11	ELEMENT, HALL (CHIP TYPE)	
H992	1-808-448-11	ELEMENT, HALL (CHIP TYPE)	
		< TRANSISTOR >	
Q991	8-729-907-25	TRANSISTOR PT4850F	
Q992	8-729-907-25	TRANSISTOR PT4850F	
		< RESISTOR >	
R991	1-216-817-11	METAL CHIP 470 5% 1/16W	
R992	1-216-817-11	METAL CHIP 470 5% 1/16W	
R993	1-216-817-11	METAL CHIP 470 5% 1/16W	
R994	1-216-817-11	METAL CHIP 470 5% 1/16W	
		< SWITCH >	
S991	1-572-611-11	SWITCH, LEAF	
S992	1-572-802-12	SWITCH, PUSH (3 KEY)	

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Ref. No.	Part No.	Description	Remark
*	A-7071-878-A	HJ-14P BOARD, COMPLETE **********************	
		(Ref.No. 6,000 Series)	
		< CAPACITOR >	
C501	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C502	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C503	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
		< CONNECTOR >	
CN501	1-691-550-11	PIN, CONNECTOR (1.5MM)(SMD) 3P	
		< DIODE >	
D501	8-719-420-14	DIODE MA8082-M	
D502	8-719-988-62	DIODE 1SS355	
D503	8-719-420-14	DIODE MA8082-M	
D504	8-719-988-62	DIODE 1SS355	
D505	8-719-988-62	DIODE 1SS355	
		< JACK >	
J501	1-569-809-11	JACK (SMALL TYPE)(PHONES)	
		< COIL >	
L501	1-410-369-11	INDUCTOR CHIP 1uH	
L502	1-410-369-11	INDUCTOR CHIP 1uH	
L503	1-410-369-11	INDUCTOR CHIP 1uH	

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Ref. No.	Part No.	Description	Remark
*	A-7071-879-A	LJ-13P BOARD, COMPLETE **********************	
		(Ref.No. 5,000 Series)	
		< CAPACITOR >	
C511	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C513	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
		< CONNECTOR >	
CN511	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P	
		< DIODE >	
D513	8-719-988-62	DIODE 1SS355	
		< JACK >	
J511	1-565-276-21	JACK, ULTRA SMALL 1P (REMOTE)	
		< RESISTOR >	
R511	1-216-296-00	METAL CHIP 0 5% 1/8W	
R512	1-216-296-00	METAL CHIP 0 5% 1/8W	
R513	1-216-296-00	METAL CHIP 0 5% 1/8W	

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Ref. No.	Part No.	Description	Remark
*	A-7063-665-A	MA-174P BOARD, COMPLETE ***********************	
		(Ref.No. 7,000 Series)	
	3-947-195-01	PLATE, GROUND, MC	
		< CAPACITOR >	
C901	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C905	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C906	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C907	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C908	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V	
C909	1-164-222-11	CERAMIC CHIP 0.22uF 25V	
C910	1-164-222-11	CERAMIC CHIP 0.22uF 25V	
C911	1-162-638-11	CERAMIC CHIP 1uF 16V	
C912	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	
C913	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C914	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C916	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C917	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C918	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C919	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C920	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C921	1-162-638-11	CERAMIC CHIP 1uF 16V	
C922	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	

Ref.No.	Part No.	Description			Remark
C923	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C924	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C925	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C926	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C927	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C928	1-164-634-11	CERAMIC CHIP	1uF		16V
C929	1-164-634-11	CERAMIC CHIP	1uF		16V
C931	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C932	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C933	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C934	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C935	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C936	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C937	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C938	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C939	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C940	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C941	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C942	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C943	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C944	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C945	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C946	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C947	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C948	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C949	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C950	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C951	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C952	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C953	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C954	1-164-173-11	CERAMIC CHIP	0.0039uF	10%	50V
C956	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C957	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C959	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C960	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C961	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C962	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C963	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C964	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C965	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C969	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C971	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C972	1-164-670-11	CERAMIC CHIP	1200PF	5%	16V
C973	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C974	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C975	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C976	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C977	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C980	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C981	1-162-953-11	CERAMIC CHIP	100PF	5%	50V

Ref.No.	Part No.	Description			Remark
C982	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
		< CONNECTOR >			
CN901	1-691-591-11	PIN, CONNECTOR (1.5MM) (SMD)8P			
CN902	1-691-591-11	PIN, CONNECTOR (1.5MM) (SMD)8P			
CN903	1-691-550-11	PIN, CONNECTOR (1.5MM)(SMD) 3P			
		< DIODE >			
D901	8-719-404-46	DIODE	MA110		
D903	8-719-404-46	DIODE	MA110		
D904	8-719-420-14	DIODE	MA8082-M		
D905	8-719-420-14	DIODE	MA8082-M		
		< IC >			
IC901	8-759-057-79	IC	LA7470V		
		< JACK >			
J901	1-569-810-11	JACK (SMALL TYPE)(MIC)			
		< COIL >			
L901	1-410-993-11	INDUCTOR CHIP	1uH		
L902	1-410-993-11	INDUCTOR CHIP	1uH		
L903	1-410-993-11	INDUCTOR CHIP	1uH		
		< TRANSISTOR >			
Q901	8-729-015-63	TRANSISTOR	XN4556		
Q902	8-729-015-63	TRANSISTOR	XN4556		
Q904	8-729-822-97	TRANSISTOR	2SC4211-5.6.7		
Q905	8-729-822-94	TRANSISTOR	FC102		
Q907	8-729-822-48	TRANSISTOR	FC101		
Q908	8-729-402-42	TRANSISTOR	UN5213		
Q909	8-729-822-97	TRANSISTOR	2SC4211-5.6.7		
Q910	8-729-822-94	TRANSISTOR	FC102		
Q911	8-729-822-94	TRANSISTOR	FC102		
Q912	8-729-822-48	TRANSISTOR	FC101		
Q913	8-729-905-23	TRANSISTOR	2SA1576-R		
Q914	8-729-822-94	TRANSISTOR	FC102		
Q915	8-729-822-94	TRANSISTOR	FC102		
Q917	8-729-403-35	TRANSISTOR	UN5113		
Q918	8-729-822-48	TRANSISTOR	FC101		
Q921	8-729-822-94	TRANSISTOR	FC102		
Q922	8-729-822-48	TRANSISTOR	FC101		
Q923	8-729-905-23	TRANSISTOR	2SA1576-R		
Q924	8-729-822-94	TRANSISTOR	FC102		
Q925	8-729-822-94	TRANSISTOR	FC102		
Q927	8-729-403-35	TRANSISTOR	UN5113		
Q930	8-729-403-35	TRANSISTOR	UN5113		

MA-174P

Ref.No.	Part No.	Description	Remark
		< RESISTOR >	
R892	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R893	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R894	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R895	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R897	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R898	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R901	1-216-817-11	METAL CHIP 470 5% 1/16W	
R905	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R906	1-216-818-11	METAL CHIP 560 5% 1/16W	
R907	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R908	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R909	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R910	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R912	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R913	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R914	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R915	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R916	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R917	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R918	1-216-846-11	METAL CHIP 120K 5% 1/16W	
R919	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R920	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R921	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R922	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R923	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R924	1-216-848-11	METAL CHIP 180K 5% 1/16W	
R925	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R926	1-216-818-11	METAL CHIP 560 5% 1/16W	
R927	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R928	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R929	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R930	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R931	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R933	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R934	1-216-847-11	METAL CHIP 150K 5% 1/16W	
R935	1-216-848-11	METAL CHIP 180K 5% 1/16W	
R936	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R937	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R938	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R939	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R940	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R941	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R942	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R943	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R944	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R945	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R946	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R947	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R948	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R949	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R950	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R951	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R953	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R954	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R955	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R956	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R957	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R958	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R959	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R960	1-216-855-11	METAL CHIP 680K 5% 1/16W	
R961	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R963	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R964	1-216-847-11	METAL CHIP 150K 5% 1/16W	
R965	1-216-848-11	METAL CHIP 180K 5% 1/16W	
R966	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R967	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R968	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R969	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R970	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R971	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R972	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R975	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R976	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R977	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R978	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R979	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R980	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R981	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R982	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R983	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R984	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R985	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R986	1-216-848-11	METAL CHIP 180K 5% 1/16W	
R987	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R988	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R989	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R990	1-216-855-11	METAL CHIP 680K 5% 1/16W	
R993	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R994	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R995	1-216-814-11	METAL CHIP 270 5% 1/16W	
R996	1-216-814-11	METAL CHIP 270 5% 1/16W	
R997	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R998	1-216-846-11	METAL CHIP 120K 5% 1/16W	
		< VARIABLE RESISTOR >	
RV901	1-238-854-11	RES, ADJ, CERMET 2.2K	

Ref.No.	Part No.	Description	Remark
		< SWITCH >	
S901	1-572-497-11	SWITCH, SLIDE (BUILT-IN MIC/ZOOM MIC)	
S902	1-571-684-11	SWITCH, TACTIL (FADER)	
**			
*	A-7071-880-A	RM-68P BOARD, COMPLETE **********************	
		(Ref.No. 4,000 Series)	
		< CAPACITOR >	
C401	1-162-638-11	CERAMIC CHIP 1uF 16V	
		< CONNECTOR >	
CN401	1-580-056-21	PIN, CONNECTOR 3P	
		< IC >	
IC401	8-749-923-29	IC RS-20E-T	
		< RESISTOR >	
R401	1-216-017-00	METAL CHIP 47 5% 1/10W	
		< SWITCH >	
S401	1-692-043-11	SWITCH, PUSH (1 KEY) (REMOTE COMMANDER ON/OFF)	
**			
*	A-7063-663-A	SE-26P BOARD, COMPLETE **********************	
		(Ref.No. 1,000 Series)	
		< CAPACITOR >	
C101	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C102	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C103	1-164-299-11	CERAMIC CHIP 0.22uF 10% 25V	
C104	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C105	1-164-299-11	CERAMIC CHIP 0.22uF 10% 25V	
C106	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C107	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	
C108	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	
C109	1-128-257-21	ELECT CHIP 33uF 20% 10V	
C110	1-128-257-21	ELECT CHIP 33uF 20% 10V	
C111	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C112	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C114	1-135-163-21	TANTAL. CHIP 47uF 20% 4V	
C116	1-135-161-21	TANTALUM CHIP 22uF 10% 10V	
C117	1-135-163-21	TANTAL. CHIP 47uF 20% 4V	
C118	1-164-336-11	CERAMIC CHIP 0.33uF 25V	
C119	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C120	1-164-336-11	CERAMIC CHIP 0.33uF 25V	
C121	1-135-161-21	TANTALUM CHIP 22uF 10% 10V	
		< CONNECTOR >	
CN101	1-691-516-11	CONNECTOR, BOARD TO BOARD 24P	
		< IC >	
IC101	8-759-998-98	IC LM358D	
IC102	8-759-981-75	IC RC3403AM	
IC103	8-759-234-77	IC TC4S66F	
IC104	8-759-234-77	IC TC4S66F	
		< RESISTOR >	
R101	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R102	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R103	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R104	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R105	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R106	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R107	1-218-768-11	METAL CHIP 470K 0.50% 1/10W	
R108	1-218-768-11	METAL CHIP 470K 0.50% 1/10W	
R109	1-216-013-00	METAL CHIP 33 5% 1/10W	
R111	1-216-013-00	METAL CHIP 33 5% 1/10W	
R113	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R115	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R116	1-216-850-11	METAL CHIP 270K 5% 1/16W	
R117	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R118	1-216-850-11	METAL CHIP 270K 5% 1/16W	
R119	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R120	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R121	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R122	1-218-768-11	METAL CHIP 470K 0.50% 1/10W	
R123	1-218-768-11	METAL CHIP 470K 0.50% 1/10W	
R124	1-216-833-11	METAL CHIP 10K 5% 1/16W	
		< FLEXIBLE BOARD >	
W101	1-642-239-11	FP-486 FLEXIBLE BOARD	
**			
*	A-7063-661-A	VC-135 BOARD, COMPLETE **********************	
		(Ref.No. 2,000 Series)	
		< CAPACITOR >	
C701	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C703	1-164-337-11	CERAMIC CHIP 2.2uF 16V	
C705	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C706	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C707	1-164-360-11	CERAMIC CHIP 0.1uF 16V	

VC-135

Ref.No.	Part No.	Description			Remark
C708	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C709	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C710	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C711	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C712	1-162-638-11	CERAMIC CHIP	1uF		16V
C713	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C714	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C715	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C716	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C717	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C718	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C720	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C721	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C723	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C724	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C725	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C726	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C727	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C728	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C730	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C731	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C735	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C737	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C738	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C741	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C742	1-162-943-11	CERAMIC CHIP	15PF	5%	50V
C743	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C744	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C745	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C746	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C747	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C748	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C750	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C801	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C802	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C803	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C804	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C805	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C806	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C807	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C808	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C809	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C810	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C811	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C813	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C814	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C815	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C816	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C817	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C818	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C819	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C820	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C821	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C823	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C826	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C827	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C830	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C832	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C833	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C834	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C835	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C836	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C837	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C839	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C841	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C845	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C846	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C851	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C853	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C854	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C855	1-135-161-21	TANTALUM CHIP	22uF	10%	10V
C856	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C857	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C858	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C859	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C860	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C861	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C862	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C863	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C865	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C866	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C867	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C868	1-162-638-11	CERAMIC CHIP	1uF		16V
C869	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C870	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C872	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C874	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C921	1-164-634-11	CERAMIC CHIP	1uF		16V
C922	1-164-634-11	CERAMIC CHIP	1uF		16V
C923	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C924	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C926	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C930	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C931	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C932	1-135-092-21	TANTALUM CHIP	3.3uF	10%	16V
C933	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C934	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C935	1-162-920-1	CERAMIC CHIP	27PF	5%	50V
C936	1-164-237-1	CERAMIC CHIP	16PF	5%	50V
C937	1-162-974-11	CERAMIC CHIP	0.01uF		50V

Ref. No.	Part No.	Description	Remark
C938	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C939	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C940	1-162-962-11	CERAMIC CHIP 470PF 10%	50V
C941	1-162-961-11	CERAMIC CHIP 330PF 10%	50V
C942	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C943	1-162-966-11	CERAMIC CHIP 0.0022uF 10%	50V
C945	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C947	1-162-638-11	CERAMIC CHIP 1uF	16V
C949	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C950	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN701	1-691-920-11	CONNECTOR, BOARD TO BOARD 18P	
CN801	1-573-523-21	CONNECTOR, BOARD TO BOARD 16P	
CN851	1-573-930-11	CONNECTOR, FFC/FPC (ZIF) 21P	
CN922	1-691-552-11	CONNECTOR, BOARD TO BOARD 48P	
CN923	1-573-293-21	PIN, CONNECTOR (1.5MM)(SMD) 2P	
CN924	1-573-371-21	CONNECTOR, BOARD TO BOARD 14P	
CN925	1-580-056-21	PIN, CONNECTOR 3P	

< TRIMMER >

Ref. No.	Part No.	Description	Remark
CT801	1-141-356-11	CAP, ADJ	

< DIODE >

Ref. No.	Part No.	Description	Remark
D923	8-719-404-46	DIODE MA110	
D924	8-719-404-46	DIODE MA110	
D925	8-719-404-46	DIODE MA110	
D927	8-719-404-46	DIODE MA110	
D930	8-719-421-27	DIODE MA728	

< FILTER >

Ref. No.	Part No.	Description	Remark
FL701	1-236-759-21	FILTER, LOW PASS (TRAP)	
FL702	1-415-731-21	DELAY LINE, LC (YH)	
FL921	1-406-452-11	COIL, OSC	

< IC >

Ref. No.	Part No.	Description	Remark
IC701	8-759-044-78	IC AK6420F	
IC702	8-752-841-57	IC CXP80624-443Q	
IC703	8-752-355-56	IC CXD2104BN	
IC705	8-759-635-27	IC M62352GP	
IC706	8-759-069-18	IC CXD2103AR	
IC707	8-752-340-22	IC CXK5864BTM-12LL	
IC708	8-752-347-93	IC CXD2100AQ	
IC709	8-759-518-81	IC CXD2112R	
IC710	8-752-348-92	IC CXD2101AR	
IC711	8-759-243-19	IC TC7SU04F	
IC801	8-752-341-09	IC CXD1265R	
IC802	8-752-060-50	IC CXA1577R	
IC803	8-752-053-26	IC CXA1399Q	
IC804	8-752-327-48	IC CXD1250N	
IC805	8-752-054-61	IC CXA1390AR	

Ref. No.	Part No.	Description	Remark
IC851	8-759-513-26	IC XRU5846FS	
IC852	8-759-701-24	IC NJM3414M	
IC853	8-759-998-96	IC LM324D	
IC855	8-759-038-81	IC MPC1724M	
IC856	8-759-823-51	IC LB1830M	
IC857	8-759-099-00	IC MB88101PFV-G-BND-ER	
IC921	8-759-056-84	IC S-8420AF	
IC923	8-759-044-78	IC AK6420F	
IC924	8-759-182-66	IC uPD75316GF-397-3B9	
IC925	8-759-999-02	IC TL1596CDB	
IC926	8-759-145-63	IC uPD7564G-540	
IC927	8-759-069-29	IC uPD6456GS-618	

< COIL >

Ref. No.	Part No.	Description	Remark
L701	1-412-006-31	INDUCTOR CHIP 10uH	
L702	1-412-058-11	INDUCTOR CHIP 10uH	
L703	1-412-006-31	INDUCTOR CHIP 10uH	
L704	1-412-006-31	INDUCTOR CHIP 10uH	
L705	1-412-058-11	INDUCTOR CHIP 10uH	
L706	1-412-062-11	INDUCTOR CHIP 47uH	
L707	1-412-006-31	INDUCTOR CHIP 10uH	
L708	1-412-006-31	INDUCTOR CHIP 10uH	
L711	1-410-392-11	INDUCTOR CHIP 82uH	
L712	1-412-006-31	INDUCTOR CHIP 10uH	
L714	1-412-052-21	INDUCTOR CHIP 1uH	
L715	1-412-979-21	INDUCTOR 1uH	
L716	1-412-979-21	INDUCTOR 1uH	
L717	1-412-026-11	INDUCTOR CHIP 1uH	
L718	1-412-026-11	INDUCTOR CHIP 1uH	
L719	1-412-006-31	INDUCTOR CHIP 10uH	
L720	1-412-006-31	INDUCTOR CHIP 10uH	
L721	1-410-993-11	INDUCTOR CHIP 1uH	
L801	1-412-028-11	INDUCTOR CHIP 4.7uH	
L802	1-412-006-31	INDUCTOR CHIP 10uH	
L803	1-412-028-11	INDUCTOR CHIP 4.7uH	
L804	1-412-028-11	INDUCTOR CHIP 4.7uH	
L853	1-412-058-11	INDUCTOR CHIP 10uH	
L854	1-412-062-11	INDUCTOR CHIP 47uH	
L921	1-410-389-31	INDUCTOR CHIP 47uH	
L922	1-412-052-21	INDUCTOR CHIP 1uH	
L923	1-412-052-21	INDUCTOR CHIP 1uH	
L924	1-412-058-11	INDUCTOR CHIP 10uH	
L926	1-412-006-31	INDUCTOR CHIP 10uH	

< IC LINK >

Ref. No.	Part No.	Description	Remark
⚠PS921	1-576-122-21	LINK, IC CCP2E10 0.4A	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q703	8-729-402-42	TRANSISTOR UN5213	
Q706	8-729-010-60	TRANSISTOR MSA1586-BC	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

VC-135

Ref. No.	Part No.	Description	Remark
Q707	8-729-010-60	TRANSISTOR MSA1586-BC	
Q708	8-729-010-75	TRANSISTOR MSC4116-B/C	
Q709	8-729-010-75	TRANSISTOR MSC4116-B/C	
Q710	8-729-402-84	TRANSISTOR XN4601	
Q801	8-729-010-75	TRANSISTOR MSC4116-B/C	
Q802	8-729-403-27	TRANSISTOR XN4401	
Q853	8-729-010-75	TRANSISTOR MSC4116-BC	
Q854	8-729-907-00	TRANSISTOR DTC114EU	
Q855	8-729-403-27	TRANSISTOR XN4401	
Q921	8-729-905-99	TRANSISTOR DTC114TU	
Q922	8-729-905-99	TRANSISTOR DTC114TU	
Q923	8-729-907-00	TRANSISTOR DTC114EU	
Q925	8-729-403-35	TRANSISTOR UN5113	
Q926	8-729-905-99	TRANSISTOR DTC114TU	
Q927	8-729-905-15	TRANSISTOR DTC144WU	
		< RESISTOR >	
R701	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R702	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R703	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R704	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R705	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R706	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R707	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R708	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R710	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R711	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R712	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R720	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R721	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R726	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R730	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R732	1-216-864-11	METAL CHIP 0 5% 1/16W	
R734	1-216-814-11	METAL CHIP 270 5% 1/16W	
R735	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R736	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R737	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R738	1-216-863-11	METAL GLAZE 3.3M 5% 1/16W	
R739	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R740	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R741	1-216-864-11	METAL CHIP 0 5% 1/16W	
R743	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R745	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R746	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R747	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R748	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R749	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R750	1-216-815-11	METAL CHIP 330 5% 1/16W	
R751	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R755	1-218-837-11	METAL CHIP 390 0.50% 1/16W	
R756	1-218-837-11	METAL CHIP 390 0.50% 1/16W	
R763	1-218-873-11	METAL CHIP 12K 0.50% 1/16W	
R764	1-218-873-11	METAL CHIP 12K 0.50% 1/16W	
R766	1-216-820-11	METAL CHIP 820 5% 1/16W	
R767	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R769	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R770	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R771	1-216-817-11	METAL CHIP 470 5% 1/16W	
R772	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R773	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R774	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R775	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R776	1-216-814-11	METAL CHIP 270 5% 1/16W	
R777	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R778	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R779	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R780	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R783	1-216-309-00	METAL CHIP 5.6 5% 1/10W	
R785	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R786	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R787	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R788	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R789	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R790	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R801	1-216-864-11	METAL CHIP 0 5% 1/16W	
R802	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R803	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R804	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R805	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R808	1-216-801-11	METAL CHIP 22 5% 1/16W	
R809	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R810	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R812	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R813	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R814	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R819	1-216-805-11	METAL CHIP 47 5% 1/16W	
R821	1-216-859-11	METAL GLAZE 1.5M 5% 1/16W	
R823	1-218-876-11	METAL CHIP 16K 0.50% 1/16W	
R825	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R830	1-218-847-11	METAL CHIP 1K 0.50% 1/16W	
R831	1-216-818-11	METAL CHIP 560 5% 1/16W	
R832	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R833	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R835	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R851	1-216-182-00	METAL GLAZE 220 5% 1/8W	
R853	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R854	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R855	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R856	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R857	1-216-837-11	METAL CHIP 22K 5% 1/16W	

Ref.No.	Part No.	Description				Remark
R858	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R859	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R860	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R861	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R862	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R863	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R864	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R865	1-216-820-11	METAL CHIP	820	5%	1/16W	
R867	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R868	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R869	1-216-848-11	METAL CHIP	180K	5%	1/16W	
R870	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R872	1-216-848-11	METAL CHIP	180K	5%	1/16W	
R873	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R874	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R875	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R876	1-216-816-11	METAL CHIP	390	5%	1/16W	
R877	1-216-134-00	METAL CHIP	2.2	5%	1/8W	
R878	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R879	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R880	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R910	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R911	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R921	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R922	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R924	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R925	1-216-813-11	METAL CHIP	220	5%	1/16W	
R926	1-216-813-11	METAL CHIP	220	5%	1/16W	
R927	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R929	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R930	1-216-813-11	METAL CHIP	220	5%	1/16W	
R931	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R932	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R933	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R934	1-216-813-11	METAL CHIP	220	5%	1/16W	
R936	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R942	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R943	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R944	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R945	1-218-857-11	METAL CHIP	2.7K	0.50%	1/16W	
R946	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R947	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R948	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R949	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R950	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R951	1-216-809-11	METAL CHIP	100	5%	1/16W	
R952	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R953	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R954	1-216-814-11	METAL CHIP	270	5%	1/16W	
R955	1-216-817-11	METAL CHIP	470	5%	1/16W	

Ref.No.	Part No.	Description				Remark
R957	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R958	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R960	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R961	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R962	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R963	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R964	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R965	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R966	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R967	1-216-809-11	METAL CHIP	100	5%	1/16W	
R968	1-216-809-11	METAL CHIP	100	5%	1/16W	
R969	1-216-809-11	METAL CHIP	100	5%	1/16W	

< NETWORK >

Ref.No.	Part No.	Description
RB701	1-236-432-11	NETWORK, RES 47K
RB921	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)
RB922	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)
RB923	1-236-432-11	NETWORK, RES 47K
RB924	1-236-412-11	NETWORK, RES 1.0K
RB925	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)
RB926	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)
RB927	1-236-908-11	RESISTOR, NETWORK (CHIP TYPE)
RB928	1-236-908-11	RESISTOR, NETWORK (CHIP TYPE)
RB929	1-236-904-11	RESISTOR, NETWORK (CHIP TYPE)
RB930	1-236-907-11	RESISTOR, NETWORK (CHIP TYPE)
RB931	1-236-907-11	RESISTOR, NETWORK (CHIP TYPE)
RB932	1-236-405-11	NETWORK, RES 270
RB935	1-236-416-11	NETWORK, RES 2.2K
RB937	1-236-432-11	NETWORK, RES 47K

< FLEXIBLE BOARD >

Ref.No.	Part No.	Description
W701	1-642-240-11	FP-518 FLEXIBLE BOARD
W926	1-642-235-11	FP-481 FLEXIBLE BOARD

< VIBRATOR >

Ref.No.	Part No.	Description
X701	1-579-553-11	VIBRATOR (10MHz)
X801	1-579-621-11	VIBRATOR, CRYSTAL (28.375MHz)
X921	1-579-063-21	VIBRATOR, CERAMIC (4.19MHz)
X922	1-579-550-11	VIBRATOR, CRYSTAL (32kHz)
X923	1-579-551-11	VIBRATOR, CERAMIC (700kHz)

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* A-7063-664-A VD-22P BOARD, COMPLETE

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(Ref.No. 1,000 Series)

< CAPACITOR >

Ref.No.	Part No.	Description				Remark
C001	1-135-170-21	TANTALUM CHIP	6.8uF	20%	4V	
C002	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V	
C003	1-164-360-11	CERAMIC CHIP	0.1uF		16V	
C004	1-164-360-11	CERAMIC CHIP	0.1uF		16V	

VD-22P

Ref. No.	Part No.	Description			Remark
C005	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C006	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C007	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C008	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C009	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C010	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C011	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C012	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C013	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C014	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C017	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C018	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C019	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C020	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C021	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C022	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C023	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C024	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C025	1-135-211-11	TANTAL. CHIP	6.8uF	20%	6.3V
C027	1-135-211-11	TANTAL. CHIP	6.8uF	20%	6.3V
C028	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C029	1-164-343-11	CERAMIC CHIP	0.056uF	10%	25V
C030	1-164-343-11	CERAMIC CHIP	0.056uF	10%	25V
C033	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C034	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C035	1-162-974-11	CERAMIC CHIP	0.01uF		50V

< CONNECTOR >

CN001	1-691-536-11	CONNECTOR, BOARD TO BOARD 24P
CN002	1-691-513-11	CONNECTOR, BOARD TO BOARD 12P
CN003	1-580-057-11	PIN, CONNECTOR 4P

< IC >

IC001	8-759-701-24	IC	NJM3414M
IC002	8-759-998-96	IC	LM324D
IC003	8-759-981-75	IC	RC3403AM
IC004	8-759-701-24	IC	NJM3414M
IC005	8-759-058-98	IC	SC370605D
IC006	8-752-839-91	IC	CXP80620-425Q
IC007	8-759-500-11	IC	MM1036XF

< COIL >

L001	1-412-006-31	INDUCTOR CHIP	10uH
L002	1-412-006-31	INDUCTOR CHIP	10uH
L003	1-412-058-11	INDUCTOR CHIP	10uH
L004	1-412-006-31	INDUCTOR CHIP	10uH

< TRANSISTOR >

Ref. No.	Part No.	Description		Remark
Q001	8-729-920-99	TRANSISTOR	DTA114EU	
Q002	8-729-402-78	TRANSISTOR	XN6401	
Q003	8-729-402-42	TRANSISTOR	UN5213	

< RESISTOR >

Ref. No.	Part No.	Description				Remark
R001	1-216-031-00	METAL CHIP	180	5%	1/10W	
R002	1-218-871-11	METAL CHIP	10K	0.50%	1/16W	
R003	1-218-871-11	METAL CHIP	10K	0.50%	1/16W	
R004	1-218-895-11	METAL CHIP	100K	0.50%	1/16W	
R005	1-218-851-11	METAL CHIP	1.5K	0.50%	1/16W	
R006	1-218-863-11	METAL CHIP	4.7K	0.50%	1/16W	
R007	1-218-891-11	METAL CHIP	68K	0.50%	1/16W	
R008	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R009	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R010	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R011	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R012	1-218-891-11	METAL CHIP	68K	0.50%	1/16W	
R013	1-218-871-11	METAL CHIP	10K	0.50%	1/16W	
R014	1-218-871-11	METAL CHIP	10K	0.50%	1/16W	
R015	1-218-895-11	METAL CHIP	100K	0.50%	1/16W	
R016	1-218-851-11	METAL CHIP	1.5K	0.50%	1/16W	
R017	1-218-895-11	METAL CHIP	100K	0.50%	1/16W	
R018	1-218-895-11	METAL CHIP	100K	0.50%	1/16W	
R019	1-218-863-11	METAL CHIP	4.7K	0.50%	1/16W	
R020	1-218-895-11	METAL CHIP	100K	0.50%	1/16W	
R021	1-218-903-11	METAL CHIP	220K	0.50%	1/16W	
R022	1-218-903-11	METAL CHIP	220K	0.50%	1/16W	
R023	1-218-895-11	METAL CHIP	100K	0.50%	1/16W	
R024	1-218-887-11	METAL CHIP	47K	0.50%	1/16W	
R025	1-218-887-11	METAL CHIP	47K	0.50%	1/16W	
R029	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R030	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R031	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R032	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R033	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R034	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R035	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R036	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R037	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R038	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R039	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R040	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R041	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R042	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R044	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R045	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R047	1-216-814-11	METAL CHIP	270	5%	1/16W	
R052	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R053	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R054	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R055	1-216-789-11	METAL CHIP	2.2	5%	1/16W	
R056	1-216-821-11	METAL CHIP	1K	5%	1/16W	

Ref.No.	Part No.	Description	Remark
R057	1-218-843-11	METAL CHIP 680 0.50% 1/16W	
R058	1-218-843-11	METAL CHIP 680 0.50% 1/16W	
		< VIBRATOR >	
X001	1-579-553-11	VIBRATOR (12MHz)	

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Ref.No.	Part No.	Description	Remark
*	A-7063-220-A	VF-42P BOARD, COMPLETE ********************** (Ref.No. 8,000 Series)	
	3-942-888-01	HOLDER, LED	
		< CAPACITOR >	
C501	1-126-176-11	ELECT 220uF 20% 10V	
C502	1-163-077-00	CERAMIC CHIP 0.1uF 10% 25V	
C503	1-163-109-00	CERAMIC CHIP 47PF 5% 50V	
⚠C504	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
⚠C505	1-164-758-11	CERAMIC CHIP 0.0039uF 5% 50V	
⚠C506	1-164-715-11	CERAMIC CHIP 0.0068uF 5% 50V	
C507	1-127-515-11	ELECT(SOLID) 47uF 20% 6.3V	
C508	1-164-611-11	CERAMIC CHIP 0.001uF 10% 500V	
C509	1-124-257-00	ELECT 2.2uF 20% 50V	
C510	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C511	1-126-090-11	ELECT 82uF 20% 10V	
C512	1-137-306-11	FILM CHIP 0.1uF 5% 16V	
C513	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
C514	1-131-381-00	TANTALUM 47uF 10% 10V	
C515	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C516	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
		< CONNECTOR >	
* CN501	1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P	
* CN502	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
* CN503	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
		< DIODE >	
D501	8-719-820-65	DIODE TLS221	
D502	8-719-984-02	LED BR4371F	
D503	8-719-400-20	DIODE MA152WA	
		< IC >	
IC501	8-759-420-01	IC AN2512S	
		< COIL >	
L501	1-408-976-21	INDUCTOR 33uH	
L502	1-408-785-21	INDUCTOR CHIP 47uH	
⚠L503	1-459-876-41	COIL, FERRITE (HLC)	

Ref.No.	Part No.	Description	Remark
		< TRANSISTOR >	
Q501	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q502	8-729-216-31	TRANSISTOR 2SA1163-G	
Q504	8-729-106-68	TRANSISTOR 2SD1615A-GP	
		< RESISTOR >	
R501	1-216-033-00	METAL CHIP 220 5% 1/10W	
R502	1-216-041-00	METAL CHIP 470 5% 1/10W	
R503	1-216-041-00	METAL CHIP 470 5% 1/10W	
R506	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R507	1-216-047-00	METAL CHIP 820 5% 1/10W	
R508	1-216-689-11	METAL CHIP 39K 0.5% 1/10W	
R509	1-216-689-11	METAL CHIP 39K 0.5% 1/10W	
R510	1-216-005-00	METAL CHIP 15 5% 1/10W	
R511	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R512	1-216-131-11	METAL CHIP 2.7M 5% 1/10W	
R513	1-216-101-00	METAL CHIP 150K 5% 1/10W	
R514	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R515	1-216-131-11	METAL CHIP 2.7M 5% 1/10W	
R516	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R517	1-216-025-00	METAL CHIP 100 5% 1/10W	
R518	1-216-308-00	METAL CHIP 4.7 5% 1/10W	
R519	1-216-336-11	METAL CHIP 47K 1% 1/10W	
R520	1-216-107-00	METAL CHIP 270K 5% 1/10W	
R521	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R522	1-216-160-00	METAL GLAZE 27 5% 1/8W	
R523	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R524	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R525	1-216-097-00	METAL CHIP 100K 5% 1/10W	
		< VARIABLE RESISTOR >	
RV501	1-241-596-11	RES, ADJ, METAL GRAZE 47K	
RV502	1-241-590-11	RES, ADJ, METAL GRAZE 470	
RV503	1-241-592-11	RES, ADJ, METAL GRAZE 2.2K	
RV504	1-228-762-00	RES, ADJ, METAL GLAZE 1M	
		< TRASFORMER >	
⚠T501	1-439-486-11	TRANSFORMER ASSY, FLYBACK	
		< THERMISTOR >	
TH501	1-809-350-21	THERMISTOR, NTC (2125)	
		< SOCKET >	
⚠W501	1-540-019-21	SOCKET ASSY, CRT	

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The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

VS-101

Ref.No.	Part No.	Description			Remark
*	A-7063-660-A	VS-101 BOARD, COMPLETE ********************** (Ref.No. 3,000 Series)			
	1-630-591-11	FP-182 FLEXIBLE BOARD			
*	3-946-452-01	CASE (UPPER), SHIELD, RP			
*	3-946-453-01	CASE (LOWER), SHIELD, RP			
		< CAPACITOR >			
C002	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C003	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C004	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C005	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C006	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C008	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C009	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C011	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C012	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C013	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C014	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C015	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C016	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C017	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C018	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C019	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C020	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C021	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C022	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C023	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C024	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C025	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C026	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C027	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C028	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C029	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C030	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C031	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C032	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C034	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C035	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C036	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C037	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C038	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C039	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C040	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C041	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C043	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C044	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C046	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C047	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C048	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C049	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C050	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C051	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C052	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C053	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C054	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C055	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C056	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C057	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C058	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C059	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C060	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C061	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C062	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C071	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C072	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C073	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C074	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C075	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C076	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C077	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C078	1-164-145-11	CERAMIC CHIP	390PF	5%	50V
C079	1-162-976-11	CERAMIC CHIP	75PF	5%	50V
C080	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C081	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C082	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C083	1-162-928-11	CERAMIC CHIP	120PF	5%	50V
C084	1-162-909-11	CERAMIC CHIP	4PF	0.25PF	50V
C085	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C086	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C087	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C088	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C089	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C090	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C091	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C092	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C094	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C095	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C096	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C097	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C098	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C099	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C100	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C102	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C103	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C104	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C105	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C106	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C107	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C108	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

Ref.No.	Part No.	Description			Remark
C109	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C110	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C111	1-164-383-11	CERAMIC CHIP	110PF	5%	50V
C113	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V
C114	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C115	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C116	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C117	1-162-922-11	CERAMIC CHIP	39PF	5%	50V
C119	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C120	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C121	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V
C122	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C123	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C124	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C125	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C126	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C127	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C128	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C129	1-162-941-11	CERAMIC CHIP	10PF	0.5PF	50V
C130	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C131	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C132	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C133	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C134	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V
C135	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C136	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C151	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C154	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C155	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C156	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C158	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C159	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C160	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C161	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C162	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C163	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C164	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C165	1-164-634-11	CERAMIC CHIP	1uF		16V
C166	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C167	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C168	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C169	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C170	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C171	1-162-914-11	CERAMIC CHIP	9PF	0.5PF	50V
C172	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C173	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C174	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C175	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C176	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C177	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C178	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C179	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C180	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C181	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C182	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C183	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C184	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C188	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C189	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C191	1-164-634-11	CERAMIC CHIP	1uF		16V
C192	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C193	1-164-634-11	CERAMIC CHIP	1uF		16V
C194	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C195	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C197	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C198	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C199	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C201	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C202	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C203	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C204	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C205	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C206	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C207	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C208	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C209	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C210	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C211	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C212	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C213	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C214	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C215	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C216	1-164-173-11	CERAMIC CHIP	0.0039uF	10%	50V
C219	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C220	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C221	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V
C222	1-164-634-11	CERAMIC CHIP	1uF		16V
C223	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C224	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C225	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C226	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V
C227	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C261	1-164-315-11	CERAMIC CHIP	470PF	5%	50V
C262	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C263	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C264	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C265	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C266	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C267	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C268	1-164-360-11	CERAMIC CHIP	0.1uF		16V

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Ref.No.	Part No.	Description			Remark
C269	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C270	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C271	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C273	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C274	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C275	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C276	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C277	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C278	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C279	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C280	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C281	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C282	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C283	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C292	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C293	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C301	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C302	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C303	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C304	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C305	1-164-634-11	CERAMIC CHIP	1uF		16V
C306	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C307	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C308	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C309	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C310	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C311	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C312	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C313	1-126-246-11	ELECT CHIP	220uF	20%	4V
C314	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C315	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C316	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C317	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C319	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C320	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C321	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C322	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C323	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C324	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C325	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C326	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C327	1-164-634-11	CERAMIC CHIP	1uF		16V
C351	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C352	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C353	1-135-211-11	TANTAL. CHIP	6.8uF	20%	6.3V
C354	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C355	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C356	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C357	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C358	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C359	1-163-119-00	CERAMIC CHIP	120PF	5%	50V
C360	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C361	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C362	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C363	1-164-145-11	CERAMIC CHIP	390PF	5%	50V
C370	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C401	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C402	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C403	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C404	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C405	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C406	1-164-634-11	CERAMIC CHIP	1uF		16V
C407	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C408	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C409	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C410	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C411	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C412	1-126-246-11	ELECT CHIP	220uF	20%	4V
C413	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C415	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C416	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C417	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C418	1-164-471-11	CERAMIC CHIP	680PF	5%	50V
C419	1-135-318-11	TANTAL. CHIP	33uF	20%	4V
C420	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C421	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C422	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C423	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C424	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C425	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C426	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C427	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C428	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C429	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C430	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C431	1-162-942-11	CERAMIC CHIP	12PF	5%	50V
C432	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C433	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C434	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C435	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C436	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C437	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C438	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C439	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C440	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C441	1-162-941-11	CERAMIC CHIP	10PF	0.5PF	50V
C442	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C443	1-162-946-11	CERAMIC CHIP	27PF	5%	50V
C444	1-162-956-11	CERAMIC CHIP	180PF	5%	50V
C445	1-162-954-11	CERAMIC CHIP	120PF	5%	50V

Ref.No.	Part No.	Description			Remark
C446	1-162-946-11	CERAMIC CHIP	27PF	5%	50V
C447	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C449	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C450	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C451	1-163-263-11	CERAMIC CHIP	330PF	5%	50V
C452	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C453	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C454	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C455	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C456	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C457	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C458	1-162-956-11	CERAMIC CHIP	180PF	5%	50V
C459	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C460	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C461	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C462	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C463	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C464	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C465	1-164-145-11	CERAMIC CHIP	390PF	5%	50V
C466	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C467	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C468	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C469	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C470	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C471	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C472	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C473	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C474	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C475	1-162-948-11	CERAMIC CHIP	39PF	5%	50V
C476	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C499	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C502	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C504	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C505	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C506	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C507	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C508	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C509	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C511	1-162-951-11	CERAMIC CHIP	68PF	5%	50V
C512	1-162-950-11	CERAMIC CHIP	56PF	5%	50V
C513	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C514	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C515	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C517	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C518	1-135-163-21	TANTAL. CHIP	47uF	20%	4V
C521	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C522	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C523	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C524	1-135-176-21	TANTALUM CHIP	0.68uF	10%	20V
C525	1-162-995-11	CERAMIC CHIP	0.022uF		50V

Ref.No.	Part No.	Description			Remark
C526	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C527	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C528	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C529	1-162-941-11	CERAMIC CHIP	10PF	0.5PF	50V
C530	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V
C531	1-162-910-11	CERAMIC CHIP	5PF	0.25PF	50V
C532	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C533	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C534	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C535	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C538	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C552	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C553	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C554	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C555	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C556	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C557	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C558	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C559	1-164-634-11	CERAMIC CHIP	1uF		16V
C560	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C561	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C562	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C563	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C564	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C566	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C567	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C568	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C569	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C570	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C571	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C572	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C573	1-164-634-11	CERAMIC CHIP	1uF		16V
C574	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C575	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C576	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C577	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C578	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C579	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C590	1-162-974-11	CERAMIC CHIP	0.01uF		50V
		< CONNECTOR >			
CN001	1-566-531-11	CONNECTOR, FPC (ZIF) 15P			
CN151	1-573-293-21	PIN, CONNECTOR (1.5MM)(SMD) 2P			
CN152	1-569-363-21	CONNECTOR, FPC 15P			
CN153	1-566-538-11	CONNECTOR, FPC (NON ZIF) 6P			
CN154	1-566-541-11	CONNECTOR, FPC (NON ZIF) 9P			
CN301	1-565-878-11	PIN, CONNECTOR (PC BOARD) 6P			
CN502	1-565-662-11	CONNECTOR (PC BOARD) 15P			

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Ref. No.	Part No.	Description	Remark
		< DIODE >	
D071	8-719-404-46	DIODE MA110	
D072	8-719-800-76	DIODE 1SS226	
D073	8-719-404-46	DIODE MA110	
D301	8-719-404-46	DIODE MA110	
D302	8-719-404-35	DIODE MA141WK	
D303	8-719-420-14	DIODE MA8082-M	
D304	8-719-404-46	DIODE MA110	
D305	8-719-404-46	DIODE MA110	
D306	8-719-420-14	DIODE MA8082-M	
D307	8-719-404-46	DIODE MA110	
D308	8-719-420-14	DIODE MA8082-M	
D309	8-719-404-46	DIODE MA110	
D310	8-719-420-14	DIODE MA8082-M	
D311	8-719-420-14	DIODE MA8082-M	
D351	8-719-404-46	DIODE MA110	
D402	8-719-404-35	DIODE MA141WK	
D403	8-719-820-05	DIODE 1SS181	
D404	8-719-820-05	DIODE 1SS181	
D405	8-719-404-46	DIODE MA110	
D406	8-719-404-46	DIODE MA110	
D407	8-719-404-46	DIODE MA110	
D408	8-719-404-46	DIODE MA110	
D409	8-719-404-46	DIODE MA110	
D552	8-719-404-35	DIODE MA141WK	
		< FILTER >	
FL071	1-409-475-21	FILTER, TRAP	
FL401	1-239-112-21	FILTER, LOW PASS (Y)	
FL402	1-236-775-11	FILTER, LOW PASS (DEM)	
FL501	1-239-110-11	FILTER, BAND PASS	
FL502	1-236-186-11	FILTER, BAND PASS	
FL503	1-579-371-11	FILTER, CERAMIC	
FL551	1-236-848-21	FILTER, LOW PASS	
FL552	1-239-010-11	FILTER, LOW PASS (CCD. PAL. Y)	
		< IC >	
IC001	8-759-173-71	IC CXA1555CR	
IC071	8-752-058-02	IC CXA1509AR	
IC072	8-759-009-10	IC MC14069UBF	
IC151	8-759-166-93	IC LB1843V-TLM	
IC152	8-759-823-90	IC LB8110M	
IC153	8-752-844-99	IC CXP80620A-015Q	
IC154	8-759-057-77	IC MCD004BN	
IC156	8-759-164-59	IC MCD002BR-TE-B	
IC157	8-759-059-42	IC CXA1481AR	
IC261	8-752-010-20	IC CX20102	
IC262	8-759-067-53	IC CXD2120Q	
IC301	8-759-170-69	IC MC13400VMER	
IC303	8-759-061-70	IC MB86168PFV	

Ref. No.	Part No.	Description	Remark
IC304	8-759-635-27	IC M62352GP	
IC305	8-759-635-27	IC M62352GP	
IC306	8-759-635-27	IC M62352GP	
IC351	8-759-159-96	IC M52358VP-600D	
IC401	8-752-065-54	IC CXA1207AR	
IC402	8-759-636-33	IC CXA1452N	
IC403	8-752-053-21	IC CXA1211M	
IC501	8-752-051-40	IC CXA1208R	
IC503	8-752-053-21	IC CXA1211M	
IC551	8-752-333-24	IC CXL1506M	
IC552	8-752-333-24	IC CXL1506M	
		< COIL >	
L001	1-412-033-11	INDUCTOR CHIP 220uH	
L002	1-410-381-11	INDUCTOR CHIP 10uH	
L003	1-412-032-11	INDUCTOR CHIP 100uH	
L004	1-410-385-11	INDUCTOR CHIP 22uH	
L005	1-412-032-11	INDUCTOR CHIP 100uH	
L006	1-412-032-11	INDUCTOR CHIP 100uH	
L007	1-412-032-11	INDUCTOR CHIP 100uH	
L008	1-410-385-11	INDUCTOR CHIP 22uH	
L071	1-410-381-11	INDUCTOR CHIP 10uH	
L072	1-410-657-21	INDUCTOR CHIP 180uH	
L073	1-410-384-31	INDUCTOR CHIP 18uH	
L074	1-410-379-31	INDUCTOR CHIP 6.8uH	
L075	1-410-377-31	INDUCTOR CHIP 4.7uH	
L076	1-410-384-31	INDUCTOR CHIP 18uH	
L077	1-410-376-21	INDUCTOR CHIP 3.9uH	
L078	1-408-797-11	INDUCTOR CHIP 470uH	
L079	1-410-392-11	INDUCTOR CHIP 82uH	
L080	1-410-378-11	INDUCTOR CHIP 5.6uH	
L081	1-410-655-31	INDUCTOR CHIP 120uH	
L082	1-410-657-21	INDUCTOR CHIP 180uH	
L084	1-410-388-31	INDUCTOR CHIP 39uH	
L085	1-410-384-31	INDUCTOR CHIP 18uH	
L086	1-410-382-31	INDUCTOR CHIP 12uH	
L087	1-410-381-11	INDUCTOR CHIP 10uH	
L088	1-410-381-11	INDUCTOR CHIP 10uH	
L089	1-410-381-11	INDUCTOR CHIP 10uH	
L090	1-410-387-11	INDUCTOR CHIP 33uH	
L151	1-412-062-11	INDUCTOR CHIP 47uH	
L154	1-412-058-11	INDUCTOR CHIP 10uH	
L155	1-412-064-11	INDUCTOR CHIP 100uH	
L261	1-410-658-31	INDUCTOR CHIP 220uH	
L262	1-410-381-11	INDUCTOR CHIP 10uH	
L263	1-410-381-11	INDUCTOR CHIP 10uH	
L264	1-410-381-11	INDUCTOR CHIP 10uH	
L301	1-412-029-11	INDUCTOR CHIP 10uH	
L302	1-412-029-11	INDUCTOR CHIP 10uH	
L303	1-412-031-11	INDUCTOR CHIP 47uH	

Ref. No.	Part No.	Description		Remark
L304	1-410-369-11	INDUCTOR CHIP	1uH	
L305	1-410-393-11	INDUCTOR CHIP	100uH	
L306	1-412-029-11	INDUCTOR CHIP	10uH	
L307	1-410-658-31	INDUCTOR CHIP	220uH	
L351	1-412-029-11	INDUCTOR CHIP	10uH	
L402	1-412-029-11	INDUCTOR CHIP	10uH	
L404	1-410-383-31	INDUCTOR CHIP	15uH	
L405	1-410-390-11	INDUCTOR CHIP	56uH	
L406	1-410-390-11	INDUCTOR CHIP	56uH	
L407	1-410-386-11	INDUCTOR CHIP	27uH	
L408	1-410-378-11	INDUCTOR CHIP	5.6uH	
L410	1-410-386-11	INDUCTOR CHIP	27uH	
L411	1-410-376-21	INDUCTOR CHIP	3.9uH	
L412	1-410-384-31	INDUCTOR CHIP	18uH	
L413	1-410-379-31	INDUCTOR CHIP	6.8uH	
L501	1-412-029-11	INDUCTOR CHIP	10uH	
L502	1-410-393-11	INDUCTOR CHIP	100uH	
L503	1-410-656-11	INDUCTOR CHIP	150uH	
L504	1-410-393-11	INDUCTOR CHIP	100uH	
L505	1-410-655-31	INDUCTOR CHIP	120uH	
L507	1-410-386-11	INDUCTOR CHIP	27uH	
L508	1-410-393-11	INDUCTOR CHIP	100uH	
		< IC LINK >		
⚠PS151	1-576-123-21	LINK, IC CCP2E20 0.8A		
		< TRANSISTOR >		
Q001	8-729-140-63	TRANSISTOR	2SA1611-M5M6	
Q002	8-729-140-63	TRANSISTOR	2SA1611-M5M6	
Q003	8-729-216-22	TRANSISTOR	2SA1162-G	
Q005	8-729-013-04	TRANSISTOR	2SC4851	
Q006	8-729-013-04	TRANSISTOR	2SC4851	
Q007	8-729-013-04	TRANSISTOR	2SC4851	
Q008	8-729-013-04	TRANSISTOR	2SC4851	
Q010	8-729-403-35	TRANSISTOR	UN5113	
Q011	8-729-403-35	TRANSISTOR	UN5113	
Q012	8-729-403-35	TRANSISTOR	UN5113	
Q013	8-729-403-35	TRANSISTOR	UN5113	
Q014	8-729-904-07	TRANSISTOR	FMG2	
Q015	8-729-904-07	TRANSISTOR	FMG2	
Q016	8-729-010-75	TRANSISTOR	MSC4116-B/C	
Q017	8-729-010-60	TRANSISTOR	MSA1586-BC	
Q018	8-729-403-35	TRANSISTOR	UN5113	
Q071	8-729-010-75	TRANSISTOR	MSC4116-B/C	
Q072	8-729-140-63	TRANSISTOR	2SA1611-M5M6	
Q073	8-729-010-75	TRANSISTOR	MSC4116-B/C	
Q074	8-729-402-42	TRANSISTOR	UN5213	
Q075	8-729-402-42	TRANSISTOR	UN5213	
Q076	8-729-010-75	TRANSISTOR	MSC4116-B/C	
Q078	8-729-402-42	TRANSISTOR	UN5213	
Q079	8-729-010-75	TRANSISTOR	MSC4116-B/C	
Q080	8-729-117-73	TRANSISTOR	2SC4178-F14	
Q081	8-729-140-63	TRANSISTOR	2SA1611-M5M6	
Q082	8-729-402-42	TRANSISTOR	UN5213	
Q084	8-729-010-75	TRANSISTOR	MSC4116-B/C	
Q085	8-729-420-12	TRANSISTOR	XN4213	
Q086	8-729-117-73	TRANSISTOR	2SC4178-F14	
Q087	8-729-403-35	TRANSISTOR	UN5113	
Q088	8-729-140-63	TRANSISTOR	2SA1611-M5M6	
Q089	8-729-010-75	TRANSISTOR	MSC4116-B/C	
Q090	8-729-010-75	TRANSISTOR	MSC4116-B/C	
Q091	8-729-403-35	TRANSISTOR	UN5113	
Q092	8-729-010-75	TRANSISTOR	MSC4116-B/C	
Q151	8-729-907-00	TRANSISTOR	DTC114EU	
Q261	8-729-010-75	TRANSISTOR	MSC4116-B/C	
Q262	8-729-010-75	TRANSISTOR	MSC4116-B/C	
Q263	8-729-010-75	TRANSISTOR	MSC4116-B/C	
Q264	8-729-010-75	TRANSISTOR	MSC4116-B/C	
Q265	8-729-010-60	TRANSISTOR	MSA1586-BC	
Q302	8-729-010-60	TRANSISTOR	MSA1586-BC	
Q303	8-729-403-35	TRANSISTOR	UN5113	
Q304	8-729-117-73	TRANSISTOR	2SC4178-F14	
Q306	8-729-010-75	TRANSISTOR	MSC4116-B/C	
Q307	8-729-010-60	TRANSISTOR	MSA1586-BC	
Q309	8-729-402-42	TRANSISTOR	UN5213	
Q310	8-729-402-42	TRANSISTOR	UN5213	
Q313	8-729-402-78	TRANSISTOR	XN6401	
Q314	8-729-106-60	TRANSISTOR	2SB1115A-YQ	
Q315	8-729-010-60	TRANSISTOR	MSA1586-BC	
Q316	8-729-402-42	TRANSISTOR	UN5213	
Q351	8-729-403-35	TRANSISTOR	UN5113	
Q352	8-729-402-42	TRANSISTOR	UN5213	
Q353	8-729-403-35	TRANSISTOR	UN5113	
Q357	8-729-010-75	TRANSISTOR	MSC4116-B/C	
Q401	8-729-420-07	TRANSISTOR	XN6213	
Q402	8-729-907-39	TRANSISTOR	IMD2	
Q404	8-729-402-42	TRANSISTOR	UN5213	
Q405	8-729-824-05	TRANSISTOR	3SK248	
Q407	8-729-402-42	TRANSISTOR	UN5213	
Q409	8-729-905-09	TRANSISTOR	DTA144WU	
Q410	8-729-402-78	TRANSISTOR	XN6401	
Q411	8-729-403-06	TRANSISTOR	XN1113	
Q412	8-729-930-13	TRANSISTOR	UMH2	
Q413	8-729-402-42	TRANSISTOR	UN5213	
Q414	8-729-117-73	TRANSISTOR	2SC4178-F14	
Q415	8-729-824-02	TRANSISTOR	2SA1838	
Q416	8-729-402-42	TRANSISTOR	UN5213	
Q417	8-729-010-75	TRANSISTOR	MSC4116-B/C	
Q418	8-729-402-78	TRANSISTOR	XN6401	
Q420	8-729-010-75	TRANSISTOR	MSC4116-B/C	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

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Ref. No.	Part No.	Description				Remark
Q421	8-729-402-42	TRANSISTOR	UN5213			
Q422	8-729-823-16	TRANSISTOR	2SC4555-5.6.7			
Q423	8-729-823-16	TRANSISTOR	2SC4555-5.6.7			
Q424	8-729-402-42	TRANSISTOR	UN5213			
Q425	8-729-421-90	TRANSISTOR	XN4113			
Q426	8-729-117-73	TRANSISTOR	2SC4178-F14			
Q429	8-729-402-42	TRANSISTOR	UN5213			
Q430	8-729-117-73	TRANSISTOR	2SC4178-F14			
Q431	8-729-117-73	TRANSISTOR	2SC4178-F14			
Q432	8-729-402-81	TRANSISTOR	XN4501			
Q433	8-729-010-75	TRANSISTOR	MSC4116-B/C			
Q434	8-729-010-75	TRANSISTOR	MSC4116-B/C			
Q435	8-729-403-35	TRANSISTOR	UN5113			
Q437	8-729-010-60	TRANSISTOR	MSA1586-BC			
Q438	8-729-117-73	TRANSISTOR	2SC4178-F14			
Q439	8-729-920-99	TRANSISTOR	DTA114EU			
Q440	8-729-010-60	TRANSISTOR	MSA1586-BC			
Q441	8-729-010-60	TRANSISTOR	MSA1586-BC			
Q442	8-729-402-42	TRANSISTOR	UN5213			
Q443	8-729-402-42	TRANSISTOR	UN5213			
Q444	8-729-402-42	TRANSISTOR	UN5213			
Q501	8-729-117-73	TRANSISTOR	2SC4178-F14			
Q504	8-729-010-60	TRANSISTOR	MSA1586-BC			
Q505	8-729-010-60	TRANSISTOR	MSA1586-BC			
Q506	8-729-010-75	TRANSISTOR	MSC4116-B/C			
Q507	8-729-010-75	TRANSISTOR	MSC4116-B/C			
Q508	8-729-010-75	TRANSISTOR	MSC4116-B/C			
Q509	8-729-403-35	TRANSISTOR	UN5113			
Q510	8-729-117-73	TRANSISTOR	2SC4178-F14			
Q511	8-729-402-42	TRANSISTOR	UN5213			
Q513	8-729-402-42	TRANSISTOR	UN5213			
Q514	8-729-402-42	TRANSISTOR	UN5213			
Q515	8-729-402-42	TRANSISTOR	UN5213			
Q516	8-729-402-42	TRANSISTOR	UN5213			
Q551	8-729-807-86	TRANSISTOR	2SB1295-UL5			
Q552	8-729-402-42	TRANSISTOR	UN5213			
Q553	8-729-807-86	TRANSISTOR	2SB1295-UL5			
Q554	8-729-402-42	TRANSISTOR	UN5213			
Q555	8-729-010-60	TRANSISTOR	MSA1586-BC			
Q556	8-729-010-75	TRANSISTOR	MSC4116-B/C			
Q557	8-729-010-75	TRANSISTOR	MSC4116-B/C			
Q558	8-729-402-42	TRANSISTOR	UN5213			
Q559	8-729-010-60	TRANSISTOR	MSA1586-BC			
Q560	8-729-010-75	TRANSISTOR	MSC4116-B/C			
Q599	8-729-403-35	TRANSISTOR	UN5113			
		< RESISTOR >				
R001	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R002	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R003	1-216-814-11	METAL CHIP	270	5%	1/16W	
R004	1-216-813-11	METAL CHIP	220	5%	1/16W	
R005	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R006	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R007	1-216-805-11	METAL CHIP	47	5%	1/16W	
R008	1-216-805-11	METAL CHIP	47	5%	1/16W	
R009	1-216-818-11	METAL CHIP	560	5%	1/16W	
R010	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R011	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R012	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R013	1-216-807-11	METAL CHIP	68	5%	1/16W	
R014	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R015	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R018	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R019	1-216-807-11	METAL CHIP	68	5%	1/16W	
R020	1-216-807-11	METAL CHIP	68	5%	1/16W	
R021	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R024	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R025	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R026	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R027	1-216-807-11	METAL CHIP	68	5%	1/16W	
R028	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R029	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R030	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R031	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R032	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R033	1-216-816-11	METAL CHIP	390	5%	1/16W	
R034	1-216-816-11	METAL CHIP	390	5%	1/16W	
R035	1-216-816-11	METAL CHIP	390	5%	1/16W	
R036	1-216-816-11	METAL CHIP	390	5%	1/16W	
R037	1-216-864-11	METAL CHIP	0	5%	1/16W	
R039	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R040	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R052	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R053	1-216-820-11	METAL CHIP	820	5%	1/16W	
R054	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R071	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R072	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R073	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R074	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R075	1-216-820-11	METAL CHIP	820	5%	1/16W	
R076	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R077	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R078	1-216-817-11	METAL CHIP	470	5%	1/16W	
R079	1-216-817-11	METAL CHIP	470	5%	1/16W	
R080	1-216-815-11	METAL CHIP	330	5%	1/16W	
R081	1-216-820-11	METAL CHIP	820	5%	1/16W	
R082	1-216-810-11	METAL CHIP	120	5%	1/16W	
R083	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R084	1-216-812-11	METAL CHIP	180	5%	1/16W	
R085	1-216-819-11	METAL CHIP	680	5%	1/16W	

Ref.No.	Part No.	Description				Remark
R086	1-216-864-11	METAL CHIP	0	5%	1/16W	
R087	1-216-813-11	METAL CHIP	220	5%	1/16W	
R088	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R089	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R090	1-216-819-11	METAL CHIP	680	5%	1/16W	
R091	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R092	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R093	1-216-816-11	METAL CHIP	390	5%	1/16W	
R095	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R096	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R097	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R098	1-216-813-11	METAL CHIP	220	5%	1/16W	
R099	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R100	1-216-818-11	METAL CHIP	560	5%	1/16W	
R101	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R102	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R103	1-216-820-11	METAL CHIP	820	5%	1/16W	
R104	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R105	1-216-820-11	METAL CHIP	820	5%	1/16W	
R106	1-216-814-11	METAL CHIP	270	5%	1/16W	
R107	1-216-817-11	METAL CHIP	470	5%	1/16W	
R108	1-216-817-11	METAL CHIP	470	5%	1/16W	
R109	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R110	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R111	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R112	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R114	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R116	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R117	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R118	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R119	1-216-817-11	METAL CHIP	470	5%	1/16W	
R120	1-216-810-11	METAL CHIP	120	5%	1/16W	
R121	1-216-815-11	METAL CHIP	330	5%	1/16W	
R122	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R123	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R124	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R125	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R126	1-216-817-11	METAL CHIP	470	5%	1/16W	
R127	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R128	1-216-805-11	METAL CHIP	47	5%	1/16W	
R129	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R130	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R131	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R132	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R133	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R134	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R135	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R136	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R138	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R150	1-217-671-11	METAL CHIP	1	5%	1/10W	
R151	1-216-168-00	METAL GLAZE	56	5%	1/8W	
R152	1-217-671-11	METAL CHIP	1	5%	1/10W	
R153	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R154	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R155	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R156	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R157	1-216-852-11	METAL CHIP	390K	5%	1/16W	
R158	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R159	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R160	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R161	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R162	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R163	1-218-883-11	METAL CHIP	33K	0.50%	1/16W	
R164	1-218-849-11	METAL CHIP	1.2K	0.50%	1/16W	
R166	1-216-809-11	METAL CHIP	100	5%	1/16W	
R167	1-217-671-11	METAL CHIP	1	5%	1/10W	
R168	1-217-671-11	METAL CHIP	1	5%	1/10W	
R169	1-217-671-11	METAL CHIP	1	5%	1/10W	
R170	1-217-671-11	METAL CHIP	1	5%	1/10W	
R171	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R172	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R173	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R174	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R175	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R176	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R177	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R178	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R179	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R182	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R183	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R184	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R186	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R187	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R189	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R190	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R191	1-216-864-11	METAL CHIP	0	5%	1/16W	
R193	1-216-864-11	METAL CHIP	0	5%	1/16W	
R195	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R196	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R197	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R198	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R199	1-216-856-11	METAL CHIP	820K	5%	1/16W	
R200	1-216-856-11	METAL CHIP	820K	5%	1/16W	
R201	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R202	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R203	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R204	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R205	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R206	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R207	1-216-813-11	METAL CHIP	220	5%	1/16W	

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Ref. No.	Part No.	Description				Remark
R211	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R213	1-216-864-11	METAL CHIP	0	5%	1/16W	
R215	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R216	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R217	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R218	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R219	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R261	1-216-819-11	METAL CHIP	680	5%	1/16W	
R262	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R263	1-216-811-11	METAL CHIP	150	5%	1/16W	
R264	1-216-819-11	METAL CHIP	680	5%	1/16W	
R265	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R266	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R267	1-216-809-11	METAL CHIP	100	5%	1/16W	
R268	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R269	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R270	1-216-819-11	METAL CHIP	680	5%	1/16W	
R271	1-216-813-11	METAL CHIP	220	5%	1/16W	
R272	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R273	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R274	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R275	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R276	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R277	1-216-816-11	METAL CHIP	390	5%	1/16W	
R278	1-218-313-11	METAL CHIP	560	0.50%	1/16W	
R279	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R280	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R281	1-216-819-11	METAL CHIP	680	5%	1/16W	
R282	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R283	1-216-820-11	METAL CHIP	820	5%	1/16W	
R284	1-216-811-11	METAL CHIP	150	5%	1/16W	
R285	1-216-819-11	METAL CHIP	680	5%	1/16W	
R286	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R289	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R290	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R291	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R292	1-216-852-11	METAL CHIP	390K	5%	1/16W	
R294	1-216-848-11	METAL CHIP	180K	5%	1/16W	
R296	1-216-864-11	METAL CHIP	0	5%	1/16W	
R301	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R302	1-218-856-11	METAL CHIP	2.4K	0.50%	1/16W	
R303	1-216-817-11	METAL CHIP	470	5%	1/16W	
R304	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R305	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R306	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R307	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R308	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R309	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R310	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R312	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R313	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R314	1-216-817-11	METAL CHIP	470	5%	1/16W	
R315	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R316	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R317	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R318	1-216-803-11	METAL CHIP	33	5%	1/16W	
R319	1-216-804-11	METAL CHIP	39	5%	1/16W	
R320	1-216-811-11	METAL CHIP	150	5%	1/16W	
R321	1-216-803-11	METAL CHIP	33	5%	1/16W	
R322	1-216-804-11	METAL CHIP	39	5%	1/16W	
R329	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R330	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R331	1-216-791-11	METAL CHIP	3.3	5%	1/16W	
R332	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R333	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R334	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R335	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R336	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R337	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R338	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R340	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R341	1-216-864-11	METAL CHIP	0	5%	1/16W	
R345	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R351	1-216-819-11	METAL CHIP	680	5%	1/16W	
R353	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R354	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R356	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R358	1-218-739-11	METAL CHIP	91K	0.50%	1/16W	
R358	1-218-894-11	METAL CHIP	91K	0.50%	1/16W	
R359	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R360	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R361	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R362	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R363	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R364	1-216-864-11	METAL CHIP	0	5%	1/16W	
R373	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R374	1-216-864-11	METAL CHIP	0	5%	1/16W	
R377	1-216-864-11	METAL CHIP	0	5%	1/16W	
R378	1-216-864-11	METAL CHIP	0	5%	1/16W	
R379	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R401	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R403	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R405	1-216-856-11	METAL CHIP	820K	5%	1/16W	
R408	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R409	1-216-820-11	METAL CHIP	820	5%	1/16W	
R410	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R411	1-216-804-1	METAL CHIP	39	5%	1/16W	
R412	1-216-803-11	METAL CHIP	33	5%	1/16W	
R413	1-218-895-11	METAL CHIP	100K	0.50%	1/16W	
R414	1-216-853-11	METAL CHIP	470K	5%	1/16W	

Ref.No.	Part No.	Description				Remark
R415	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R419	1-216-818-11	METAL CHIP	560	5%	1/16W	
R420	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R421	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R422	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R423	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R424	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R425	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R426	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R427	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R428	1-218-849-11	METAL CHIP	1.2K	0.50%	1/16W	
R429	1-218-859-11	METAL CHIP	3.3K	0.50%	1/16W	
R430	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R431	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R433	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R434	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R435	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R436	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R437	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R438	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R439	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R440	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R441	1-216-815-11	METAL CHIP	330	5%	1/16W	
R442	1-216-814-11	METAL CHIP	270	5%	1/16W	
R443	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R444	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R445	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R446	1-216-814-11	METAL CHIP	270	5%	1/16W	
R447	1-216-813-11	METAL CHIP	220	5%	1/16W	
R448	1-216-813-11	METAL CHIP	220	5%	1/16W	
R449	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R450	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R451	1-216-811-11	METAL CHIP	150	5%	1/16W	
R452	1-216-817-11	METAL CHIP	470	5%	1/16W	
R453	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R454	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R455	1-216-817-11	METAL CHIP	470	5%	1/16W	
R457	1-216-815-11	METAL CHIP	330	5%	1/16W	
R458	1-216-817-11	METAL CHIP	470	5%	1/16W	
R459	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R460	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R461	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R462	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R463	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R464	1-218-839-11	METAL CHIP	470	0.50%	1/16W	
R465	1-218-837-11	METAL CHIP	390	0.50%	1/16W	
R466	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R467	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R468	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R469	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R470	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R471	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R472	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R473	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R474	1-216-864-11	METAL CHIP	0	5%	1/16W	
R475	1-216-864-11	METAL CHIP	0	5%	1/16W	
R478	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R479	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R480	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R481	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R482	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R483	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R484	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R485	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R486	1-216-819-11	METAL CHIP	680	5%	1/16W	
R487	1-216-817-11	METAL CHIP	470	5%	1/16W	
R488	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R489	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R490	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R491	1-216-813-11	METAL CHIP	220	5%	1/16W	
R492	1-216-813-11	METAL CHIP	220	5%	1/16W	
R493	1-216-814-11	METAL CHIP	270	5%	1/16W	
R494	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R495	1-216-864-11	METAL CHIP	0	5%	1/16W	
R497	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R498	1-216-809-11	METAL CHIP	100	5%	1/16W	
R499	1-216-819-11	METAL CHIP	680	5%	1/16W	
R500	1-216-815-11	METAL CHIP	330	5%	1/16W	
R501	1-216-819-11	METAL CHIP	680	5%	1/16W	
R504	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R505	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R507	1-216-864-11	METAL CHIP	0	5%	1/16W	
R509	1-216-864-11	METAL CHIP	0	5%	1/16W	
R510	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R511	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R512	1-216-818-11	METAL CHIP	560	5%	1/16W	
R513	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R514	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R516	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R517	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R518	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R520	1-218-895-11	METAL CHIP	100K	0.50%	1/16W	
R521	1-216-864-11	METAL CHIP	0	5%	1/16W	
R522	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R523	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R524	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R525	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R526	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R527	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R528	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R529	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R530	1-216-817-11	METAL CHIP	470	5%	1/16W	
R531	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R532	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R533	1-216-819-11	METAL CHIP	680	5%	1/16W	
R534	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R535	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R536	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R537	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R540	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R541	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R542	1-216-807-11	METAL CHIP	68	5%	1/16W	
R543	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R544	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R546	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R549	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R550	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R551	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R552	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R553	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R554	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R555	1-216-810-11	METAL CHIP	120	5%	1/16W	
R556	1-216-844-11	METAL CHIP	82K	5%	1/16W	
R557	1-216-864-11	METAL CHIP	0	5%	1/16W	
R559	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R561	1-216-864-11	METAL CHIP	0	5%	1/16W	
R563	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R564	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R565	1-216-817-11	METAL CHIP	470	5%	1/16W	
R566	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R567	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R568	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R569	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R570	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R571	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R572	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R573	1-216-810-11	METAL CHIP	120	5%	1/16W	
R574	1-216-844-11	METAL CHIP	82K	5%	1/16W	
R575	1-216-864-11	METAL CHIP	0	5%	1/16W	
R577	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R578	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R579	1-216-864-11	METAL CHIP	0	5%	1/16W	
R580	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R581	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R582	1-216-817-11	METAL CHIP	470	5%	1/16W	
R583	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R584	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R585	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R586	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R587	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R588	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R589	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R590	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R591	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R592	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R593	1-216-820-11	METAL CHIP	820	5%	1/16W	
R595	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R596	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R599	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	

< NETWORK >

RB151	1-236-432-11	NETWORK, RES 47K
RB152	1-236-448-11	NETWORK, RES 1.0M
RB153	1-236-432-11	NETWORK, RES 47K
RB154	1-236-432-11	NETWORK, RES 47K
RB155	1-236-412-11	NETWORK, RES 1.0K
RB156	1-236-412-11	NETWORK, RES 1.0K
RB157	1-236-424-11	NETWORK, RES 10K
RB158	1-236-424-11	NETWORK, RES 10K
RB159	1-236-424-11	NETWORK, RES 10K
RB160	1-236-432-11	NETWORK, RES 47K
RB161	1-236-424-11	NETWORK, RES 10K
RB162	1-236-444-11	NETWORK, RES 470K
RB163	1-236-440-11	NETWORK, RES 220K
RB164	1-236-408-11	NETWORK, RES 470
RB165	1-236-424-11	NETWORK, RES 10K

< VARIABLE RESISTOR >

RV551	1-238-086-11	RES, ADJ, CERMET	470

< FLEXIBLE BOARD >

W002	1-642-238-11	FP-484 FLEXIBLE BOARD
W152	1-642-236-11	FP-482 FLEXIBLE BOARD
W302	1-642-237-11	FP-483 FLEXIBLE BOARD
W303	1-642-241-11	FP-519 FLEXIBLE BOARD
W304	1-642-242-11	FP-520 FLEXIBLE BOARD

< VIBRATOR >

X151	1-579-368-31	VIBRATOR, CRYSTAL (11.7MHz)
X261	1-579-558-21	VIBRATOR, CRYSTAL (11.50MHz)
X501	1-579-366-11	VIBRATOR, CRYSTAL (4.43MHz)

****

MISCELLANEOUS
****

3	1-537-297-31	TERMINAL BOARD, BATTERY
19	1-542-180-11	MICROPHONE ASSY
29	1-944-055-11	HARNESS (CD-26)
61	1-466-689-21	SWITCH BLOCK, CONTROL (CF-4)
63	1-466-800-11	SWITCH BLOCK, CONTROL (FK-4)

Ref. No.	Part No.	Description	Remark
127	1-537-407-21	TERMINAL BOARD (JACK BOARD)	
224	1-639-334-11	FP-422 FLEXIBLE BOARD	
404	1-547-529-21	FILTER BLOCK, OPTICAL (OFB-03-03)	
IC301	A-7030-371-A	CCD ASSY (059 SERVICE)(CCD IMAGER)	
M901	A-7048-653-A	DRUM BLOCK ASSY (DGH-80D-R)	
M902	8-835-329-12	MOTOR, DC U-21A (CAPSTAN)	
M903	1-541-607-21	MOTOR, DC (LA12G-344VA)(LOADING)	
M904	3-708-445-01	METER, IG (IRIS)	
M905	3-708-443-01	MOTOR ASSY, STEPPING (FOCUS)	
M906	3-708-442-01	MOTOR ASSY, PZ (ZOOM)	
⚠PS901	1-532-841-21	LINK, IC	
⚠PS902	1-532-841-21	LINK, IC	
⚠PS903	1-532-841-21	LINK, IC	
S991	1-572-611-11	SWITCH, LEAF (C LOCK)	
S992	1-572-802-12	SWITCH, PUSH (3 KEY) (REC PROOF, ME/MP, Hi-8 MP)	
SE101	1-810-024-11	SENSOR, ANGULAR VELOCITY (YS)	
SE102	1-810-024-21	SENSOR, ANGULAR VELOCITY (PS)	
⚠V901	1-452-565-11	CRT ASSY (M01KKD70WB)	
⚠W501	1-540-019-21	SOCKET ASSY, CRT	
W101	1-642-239-11	FP-486 FLEXIBLE BOARD	

****

ACCESSORIES & PACKING MATERIALS
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Ref. No.	Part No.	Description	Remark
	1-466-801-11	REMOTE CONTROLLER (CAM CODER)(RMT-508)	
	1-573-291-11	CONNECTOR, CONVERSION	
	1-575-334-11	CORD, CONNECTION (A/V connecting cable)	
	1-575-335-21	CORD, CONNECTION (S VIDEO connecting cable)	
	3-738-517-01	BELT (S), SHOULDER	
	3-947-664-11	HOLDER (B), REMOTE CONTROL	
*	3-954-984-01	CUSHION, ACC	
	3-708-412-01	LID, BATTERY CASE, LITHIUM	
	3-757-247-11	MANUAL, INSTRUCTION (ENGLISH)	
	3-757-247-41	MANUAL, INSTRUCTION (FRENCH, DUTCH)	
	3-757-247-51	MANUAL, INSTRUCTION (GERMAN, SWEDISH)	
	3-757-247-71	MANUAL, INSTRUCTION (PORTUGUESE)	
	3-757-247-81	MANUAL, INSTRUCTION (DANISH, FINNISH)	
*	3-947-226-01	CUSHION (LOWER)	
*	3-949-320-21	INDIVIDUAL CARTON	
**	AC-V35/V35A	AC POWER ADAPTOR.	
***	NP-55H	BATTERY PACK.	

Note.

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.

*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

****

****
HARDWARE LIST
****

Ref. No.	Part No.	Description	Remark
#1	7-624-102-04	STOP RING 1.5 TYPE-E	

Be sure to read "Precautions for Replacement of CCD Imager" on page 95 when changing the CCD imager.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

SECTION 7
INTERFACES • IC PIN FUNCTIONS

7-1. CAMERA MICROPROCESSOR PIN FUNCTION (IC702 ON VC-135 BOARD: CXP80624-443Q)

Pin No.	Signal	I/O	Function
1	A/D STBY	O	Not used.
2	EPROM SCK	O	
3	ZOOM M REV	O	Zoom motor control signal. Normally "H". 20 msec period PWM signal when rotating to WIDE.
4	ZOOM M FWD	O	Zoom motor control signal. Normally "H". 20 msec period PWM signal when rotating to TELE.
5	PB1		Not used.
6	PB0		
7	MF LED	O	ON/OFF signal of LED for focus ring rotation detection. "L": Manual focus. "H": Auto-focus.
8	FOC END LED	O	ON/OFF signal for focus end detection. Instantaneously "H" when camera power supply is turned on. Normally "L".
9	$\overline{\text{VAP RESET}}$	O	VAP microprocessor (IC002 on VD-22 board) reset signal. Normally "H".
10	$\overline{\text{CORE RESET}}$	O	Camera core (IC708 on VC-135 board) reset signal. Normally "H". "L" when reset.
11	PDR RESET	O	Focus predriver (IC703 on VC-135 board) reset signal. Normally "H". "L" when reset.
12			Not used.
13	TG SYBY 0		
14	$\overline{\text{OPD RESET}}$	O	OPD (IC706 on VC-135 board) reset signal. "H": camera mode. "L": VTR mode.
15	PJ7/FSEL31		Not used.
16	PJ6/FSEL30		
17	PJ5/FSEL21		
18	PJ4/FSEL20		
19	PJ3/FSEL11		
20	PJ2/FSEL10		
21	PJ1/FSEL01		
22	PJ0/FSEL00		
23	ZP A/D MODE		Connected to GND.
24	$\overline{\text{EPROM BUSY}}$	I	BUSY signal from EEPROM (IC701 on VC-135 board). Normally "H". "L" pulse when data reading/writing.
25			Not used.
26			
27	PD3/C		Connected to +5V.
28	MF DIR	I	Signal indicating focus ring rotation direction. "H" when rotated towards WIDE side. "L" when rotated towards TELE side.
29	FOC END FAR 2	I	Focus end FAR 2 sensor input. Normally "L". Instantaneously "H" when camera power supply is turned on.
30	FOC END FAR 1	I	Focus end FAR 1 sensor input. Normally "L". Instantaneously "H" when camera power supply is turned on.
31	$\overline{\text{CAM ON}}$	O	Not used.
32	PH6		
33	PH5		
34	PH4		
35	PH3		
36	PH2		
37	PH1		
38	FOC END LED	O	
39	MP		Connected to GND.
40	$\overline{\text{CAM RESET}}$	I	Reset signal input. Normally "H". "L" when reset.
41	VSS		GND
42	XTAL	O	10 MHz clock oscillation circuit.
43	EXTAL	I	
44	$\overline{\text{CS CAM}}$	I	Chip select signal from system control microprocessor (IC924 on VC-135 board).
45	VTR SI	I	Serial data input from system control microprocessor.
46	VTR SO	O	Serial data output to system control microprocessor.
47	$\overline{\text{VTR SCK}}$	I	Serial data transfer clock.
48	PF7/AN11		Not used.
49	PF6/AN10		
50	PF5/AN9		
51	PF4		
52	AVSS		GND
53	AVREF		Analog input port reference voltage (5V).
54	AVDD		Analog input port power supply (5V).
55	PF3/AN7		Connected to GND.
56	PF2/AN6		
57	MAN FOCUS (2)	I	
58	MAN FOCUS (1)	I	
59	ZOOM SW	I	Zoom key input. 4.8V: TELE 2, 3.6V: TELE 1, 1.2V: WIDE 1, 0V : WIDE 2, 2.3V: no input.
60	ZOOM POS X4	I	Connected to GND.
61	HALL A/D	I	Hall voltage. approx. 1V (iris open) to approx. 3V (iris close).
62	ZOOM POSITION A/D	I	Connected to GND.
63	PG7/EX11		Connected to +5V.
64	PB V	I	V SYNC from mechanism control microprocessor (IC153 on VS-101 board).
65	PG5/SYNC1		Not used. Connected to +5V.
66	VTR SYNC		
67	PB CTL		
68	DPG		
69	FOC FG		
70	AF BUSY	I	AF busy signal from OPD IC (IC706 on VC-135 board).
71	PE7/DAB1		Not used.
72	PE6/DAB0		
73	PE5/DAA1		
74	PE4/DAA0		
75	IRIS PWM	O	Iris control signal. 25.5 µsec period PWM signal.
76	ZP PWM	O	Not used.
77	FOCUS PULSE	I	Signal indicating focus ring rotation. Normally "L". "H" pulse when focus ring is rotated.
78	VD	I	Connected to +5V.
79	CAM SI	I	Serial data input.
80	CAM SO	O	Serial data output.
81	$\overline{\text{CAM SCK}}$	O	Serial data transfer clock.
82	AJST	I	Timing pulse input for adjusting from SYNC generator (IC710 on VC-135 board). Normally "H".
83	PI/TO		Not used.
84	PI/PWM		
85	PI/PO		
86	PI O		Connected to +5V.
87	PKO		
88	GND		GND

Pin No.	Signal	I/O	Function
89	VDD		+5V power supply
90	VPP		
91	$\overline{\text{CS VAP}}$	O	Chip select signal to VAP microprocessor (IC002 on VD-22 board).
92	$\overline{\text{CS PDR}}$	O	Chip select signal to focus predriver (IC703 on VC-135 board).
93	$\overline{\text{CS CAM D/A}}$	O	Chip select signal to camera EVR (IC705 on VC-135 board).
94	CS ROM	O	Chip select signal to EEPROM (IC701 on VC-135 board).
95	$\overline{\text{CS OPD}}$	O	Chip select signal to OPD (IC706 on VC-135 board).
96	$\overline{\text{NTSC}}$	O	NTSC: "L", PAL: "H".
97	$\overline{\text{CS CORE}}$	O	Chip select signal to camera core (IC708 on VC-135 board).
98	$\overline{\text{CS TG}}$	O	Chip select signal to timing generator (IC801 on VC-135 board).
99	J STB		Not used.
100	$\overline{\text{CS A/D}}$	O	Chip select signal to zoom position A/D converter (IC854 on VC-135 board).

7-2. SYSTEM (MECHANISM) CONTROL MICROPROCESSOR PIN FUNCTION (IC153 ON VS-101 BOARD: CXP80620A-015Q)

<table>
<tr><th>Pin No.</th><th>Signal</th><th>I/O</th><th>Function</th></tr>
<tr><td>1</td><td>CAP ON</td><td>O</td><td>Capstan driver ON/OFF control signal. "H" when capstan ON.</td></tr>
<tr><td>2</td><td>CAP FWD/$\overline{\text{RVS}}$</td><td>O</td><td>Capstan rotating direction control signal. "H": FWD, "L":RVS.</td></tr>
<tr><td>3</td><td>RP PB MODE</td><td>O</td><td>REC/PB select signal of REC/PB amplifier (IC001 on VC-101 board) and ATF servo IC (IC157 on VC-101 board). "H": PB.</td></tr>
<tr><td>4</td><td>$\overline{\text{FE ON}}$</td><td>O</td><td>Flying erase oscillation ON/OFF control signal. "L": oscillation.</td></tr>
<tr><td>5</td><td>JOG VD</td><td>O</td><td>False VD signal to be inserted into playback video signal during variable speed playback.</td></tr>
<tr><td>6</td><td>JOG</td><td>O</td><td>Variable speed/normal speed playback select signal of video circuit. "H" when variable speed playback.</td></tr>
<tr><td>7</td><td>$\overline{\text{MIC MONO}}$</td><td>I</td><td>External microphone monaural/stereo discrimination input. "L": When monaural microphone is used.</td></tr>
<tr><td>8</td><td>PB 1.7M DET</td><td>I</td><td>AFM stereo tape/monaural tape discrimination input. "H": When stereo or bilingual tape is played back.</td></tr>
<tr><td>9</td><td>J MONO</td><td>I</td><td>Audio input/output terminal monaural/stereo discrimination input. "L": When jack is inserted in right channel terminal.</td></tr>
<tr><td>10</td><td>INT VD</td><td>O</td><td>Internal VD signal.</td></tr>
<tr><td>11</td><td>PBV</td><td>O</td><td>V sync as reference to character generator, communication and LANC period.
Lock to CAM VD (Pin (64)) when CAM. Lock to VTR sync (Pin (66)) when VTR.</td></tr>
<tr><td>12</td><td>NC</td><td>O</td><td rowspan="3">Not used (Open).</td></tr>
<tr><td>13</td><td>NC</td><td>O</td></tr>
<tr><td>14</td><td>NC</td><td>O</td></tr>
<tr><td>15</td><td>MSW C</td><td>I</td><td rowspan="3">MODE switch input.
<table>
<tr><th></th><th>EJECT</th><th>USE</th><th>LS</th><th>GL</th><th>REC/PB</th><th>READY</th></tr>
<tr><td>MSW A</td><td>L</td><td>H</td><td>L</td><td>L</td><td>H</td><td>H</td></tr>
<tr><td>MSW B</td><td>L</td><td>H</td><td>H</td><td>H</td><td>L</td><td>L</td></tr>
<tr><td>MSW C</td><td>H</td><td>L</td><td>H</td><td>L</td><td>H</td><td>L</td></tr>
</table></td></tr>
<tr><td>16</td><td>MSW B</td><td>I</td></tr>
<tr><td>17</td><td>MSW A</td><td>I</td></tr>
<tr><td>18</td><td>NC</td><td></td><td>Not used (open).</td></tr>
<tr><td>19</td><td>$\overline{\text{REC PROOF SW}}$</td><td>I</td><td>Erasure protection switch input. "L" when REC prohibit.</td></tr>
<tr><td>20</td><td>ME/$\overline{\text{MP}}$ SW</td><td>I</td><td>ME/$\overline{\text{MP}}$ switch input. "L": MP, "H": ME.</td></tr>
<tr><td>21</td><td>E/$\overline{\text{L}}$ DET</td><td>I</td><td>Normal/Hi8 discrimination input. "H": When Hi8 tape is played back.</td></tr>
<tr><td>22</td><td>VIDEO MUTE</td><td>O</td><td>Video output mute signal. "H": mute.</td></tr>
<tr><td>23</td><td>LINE MIX</td><td>I</td><td>"H" only when Hi-Fi sound switch is at the "Stereo" (Green) position and plug is not inserted in the right audio output terminal as well during playback.</td></tr>
<tr><td>24</td><td>MX SEL 1</td><td>O</td><td rowspan="2">During REC: Monaural/stereo switching signal.
<table>
<tr><th></th><th>Monaural</th><th>Stereo</th></tr>
<tr><td>MX SEL 1</td><td>L</td><td>L</td></tr>
<tr><td>MX SEL 2</td><td>H</td><td>L</td></tr>
</table>
During Playback: Monaural/stereo switching signal.
<table>
<tr><th></th><th>Stereo</th><th>1</th><th>2</th><th>Monaural</th></tr>
<tr><td>MX SEL 1</td><td>L</td><td>H</td><td>L</td><td>H</td></tr>
<tr><td>MX SEL 2</td><td>L</td><td>L</td><td>H</td><td>L</td></tr>
</table></td></tr>
<tr><td>25</td><td>MX SEL 2</td><td>O</td></tr>
<tr><td>26</td><td>MX ON/OFF</td><td>O</td><td>Matrix ON/OFF signal. "H": Matrix ON (Stereo REC/PB).</td></tr>
<tr><td>27</td><td>Hi8/$\overline{\text{NORM}}$(E/$\overline{\text{L}}$)</td><td>O</td><td>Video circuit normal/Hi8 switching signal. "H": Hi8 mode.</td></tr>
<tr><td>28</td><td>CAM/$\overline{\text{LINE}}$</td><td>O</td><td>Camera input/line input select signal. "H" when camera input.</td></tr>
<tr><td>29</td><td>SP/$\overline{\text{LP}}$</td><td>O</td><td>SP/LP switching signal. "L": LP.</td></tr>
<tr><td>30</td><td>$\overline{\text{EDIT}}$</td><td>O</td><td>Video circuit normal/EDIT switching signal. "L": When "EDIT" switch is ON.</td></tr>
<tr><td>31</td><td>UNLOAD</td><td>O</td><td>Loading motor control signal. "H" or "H" pulse when unloading.</td></tr>
<tr><td>32</td><td>LOAD</td><td>O</td><td>Loading motor control signal. "H" or "H" pulse when loading.</td></tr>
<tr><td>33</td><td>$\overline{\text{LM LIM CONT}}$</td><td>O</td><td>Loading motor limiter control signal. Temporary "H" when loading.</td></tr>
<tr><td>34</td><td>DRUM ON</td><td>O</td><td>Drum motor ON/OFF signal. "H" (approx. 1.3V) when drum ON.</td></tr>
<tr><td>35</td><td>DRUM FWD/$\overline{\text{RVS}}$</td><td>O</td><td>Drum rotating direction control signal. Normally "H".</td></tr>
<tr><td>36</td><td>NC</td><td>O</td><td rowspan="2">Not used (open).</td></tr>
<tr><td>37</td><td>NC</td><td>O</td></tr>
<tr><td>38</td><td>$\overline{\text{REEL HALL CONT}}$</td><td>O</td><td>Reel FG sensor (HALL element) power supply control signal.</td></tr>
<tr><td>39</td><td>MP</td><td>I</td><td>Connected to GND.</td></tr>
</table>

Pin No.	Signal	I/O	Function
40	$\overline{\text{SYSTEM RESET}}$	I	Reset signal from mode control microprocessor (IC924 on VC-135 board). "L" when reset.
41	VSS		GND
42	XTAL	O	11.72 MHz clock oscillation circuit.
43	EXTAL	I	
44	$\overline{\text{CS}}$ COSMO	I	Chip select signal from mode control microprocessor (IC924 on VC-135 board).
45	DATA TO SLAVE	I	Serial data input from mode control microprocessor.
46	DATA TO MSTER	O	Serial data output to mode control microprocessor.
47	$\overline{\text{SCK}}$	O	Serial clock output to mode control microprocessor.
48	MONO REC	O	Monaural/stereo recording switching signal. "H": when monaural recording.
49	AUDIO MUTE	O	Audio output mute signal. "H": mute.
50	TLV CHC		+5V power supply.
51	NC		Not used (open).
52	AVSS		AD converter system GND.
53	AVREF		AD converter system reference voltage. Connected to +5V.
54	AVDD		AD converter system power supply (5V).
55	NC		Not used. Connected to GND.
56	TAPE END	I	Tape end detection signal. Normally "L". "H" pulse: tape end.
57	TAPE TOP	I	Tape top detection signal. Normally "L", "H" pulse: tape top.
58	$\overline{\text{DEW}}$	I	Dew condensation detection signal. "L" when dew condensation.
59	BATT SENSE	I	Battery voltage input for battery end detection. 1/2 divided by RB163.
60	ATF ERROR	I	ATF error, ATF lock error input.
61	S REEL FG	I	S reel FG signal input.
62	T REEL FG	I	T reel FG signal input.
63	NC	I	Not used. Connected to GND.
64	CAM VD	I	VD signal from camera circuit sync generator (IC710 on VC-135 board). V period pulse.
65	FLD	I	FIELD signal from camera circuit sync generator. 2V period pulse.
66	VTR SYNC	I	Composite sync signal separated from REC/PB Y signal.
67	SP/$\overline{\text{LP}}$ DET	I	Discrimates PB tape REC mode when CUE/REVIEW/FF and REW. "L": LP.
68	DRUM PG	I	Drum PG signal input. For drum phase servo. 26.7 msec period "H" pulse.
69	DRUM FG	I	Drum FG signal input. For drum speed servo. 4.4 msec period pulse.
70	CAP FG	I	Capstan FG signal input. For capstan speed servo. Approx. 1145.5 Hz when REC/PB. (SP mode)
71	DS ON	O	Data screen ON/OFF signal. "H": ON.
72	ME/$\overline{\text{MP}}$	O	REC current switching signal. "H": ME tape.
73	TAPE LED ON	O	Tape LED ON/OFF signal. 200 msec period "H" pulse when REC/PB.
74	VA PB MODE	O	Video/audio circuit REC/PB switching signal. "H": PB.
75	CAP PWM	O	Capstan error signal output. 21.85 μsec PWM signal.
76	DRUM PWM	O	Drum error signal output. 21.85 μsec PWM signal.
77	CFG HMS	I	Capstan FG signal input. For tape counter.
78	$\overline{\text{S JACK IN}}$	I	"L" when plug is inserted in S VIDEO terminal.
79	LANC IN	I	LANC serial data input.
80	LANC OUT	O	LANC serial data output.
81	$\overline{\text{LM LIM ON}}$	I	Loading motor limiter ON detection signal. Normally "H", "L" when limiter ON.
82	$\overline{\text{Hi8 MP SW}}$	I	Hi8 MP switch input. "L": Hi8 MP.
83	$\overline{\text{COMPOSIT REC}}$	O	Video input/S video input switching signal. "H": video input.
84	CLOG DET	I	Head clog detection signal. "L" when no trouble.
85	REF PILOT	O	ATF servo reference pilot signal. Synchronized with drum rotation to output by selecting four frequencies. f1=101.024 kHz, f2=117.188 kHz, f3=162.760 kHz and f4=146.484 kHz.
86	NC	I	Not used, connected to GND.
87	NC	I	

Pin No.	Signal	I/O	Function
88	VSS		GND
89	VDD		+5 power supply.
90	VPP		
91	$\overline{\text{PB MUTE 2B}}$	O	Head PB mute signal. Control signal for protecting crosstalk from the other three heads during PB. 4V period pulse when PB/REC ("L": only head during PB/REC). "L" when other cases.
92	$\overline{\text{PB MUTE 1B}}$	O	
93	$\overline{\text{PB MUTE 2A}}$	O	
94	$\overline{\text{PB MUTE 1A}}$	O	
95	$\overline{\text{REC 2B}}$	O	REC head (1A, 1B, 2A and 2B) select control signal. 4V period pulse when REC ("L": only head during REC). "H" when other cases.
96	$\overline{\text{REC 1B}}$	O	
97	$\overline{\text{REC 2A}}$	O	
98	$\overline{\text{REC 1A}}$	O	
99	RF SWP	O	RF switching pulse signal. 25 Hz, 50% duty pulse.
100	$\overline{\text{1/2 RF SWP}}$	O	1/2 RF switching pulse signal. 12.5 Hz, 50% duty pulse.

7-3. MODE CONTROL (MASTER) MICROPROCESSOR PIN FUNCTION (IC924 ON VC-135 BOARD: µPD75316GF-397-3B9)

Pin No.	Signal	I/O	Function
1	S12	O	LCD SEG Pin drive signal. Four value pulses of 0V, 1.6V, 3.2V and 4.8V.
2	S13	O	
3	S14	O	
4	S15	O	
5	S16	O	
6	S17	O	
7	S18	O	
8	S19	O	
9	S20	O	
10	S21	O	
11	S22	O	
12	S23	O	
13	$\overline{\text{EEPROM CS}}$	O	Chip select signal to EEPROM (IC923 on VC-135 board).
14	$\overline{\text{MK CS}}$	O	Chip select signal to data code controller (IC262 on VS-101 board).
15	TG STBY	O	Controls 4fsc timing generator (IC801 on VC-135 board) when VTR mode. Normally "L".
16	IN/$\overline{\text{OUT}}$	O	Video, audio input/output switching signal.
17	TITLE CS	O	Chip select signal to titler (IC707 on VC-135 board).
18	REMO CS	O	Chip select signal to SIRCS (infrared remote control) controller (IC926 on VC-135 board).
19	SRAM CS	O	Chip select signal to SRAM (title memory: IC707 on VC-135 board).
20	$\overline{\text{CAM CS}}$	O	Chip select signal to camera microprocessor (IC702 on VC-135 board).
21	COM0	O	LCD COM Pin drive signal. Four value pulses of 0V, 1.6V, 3.2V and 4.8V.
22	COM1	O	
23	COM2	O	
24	COM3	O	
25	BIAS	O	4.8V LCD bias terminal.
26	VLC0	I	4.8V LCD drive bias pin.
27	VLC1	I	3.2V
28	VLC2	I	1.6V
29	KEY OUT 4	O	Key matrix output. V period "L" pulse output. "Hiz" when other cases.
30	KEY OUT 5	O	
31	$\overline{\text{SYSTEM RESET}}$	O	Reset signal output of whole system. Normally "H". "L" when reset.
32	$\overline{\text{TALLY}}$	O	ON/OFF signal of TALLY LED. "L" when LED is lit.
33	GND		GND
34	KEY OUT 0	O	Key matrix output. V period "L" pulse output. "Hiz" when other cases.
35	KEY OUT 1	O	
36	KEY OUT 2	O	
37	KEY OUT 3	O	
38	$\overline{\text{BATT IN}}$	I	Main battery detection input. "L" when main battery is mounted.
39	$\overline{\text{SCK}}$	I	Serial data transfer clock.
40	DATA TO SLV	O	Serial data output.
41	DATA TO MSTR	I	Serial data input.
42	SYSTEM SYNC	I	V SYNC from mechanism control microprocessor (IC153 on VS-101 board). Timing reference signal for communication, LANC, etc.
43	$\overline{\text{LI PRE END}}$	I	Lithium battery preend detection input. "L" when no lithium battery or wasted.
44	$\overline{\text{LANC PWR ON}}$	I	Power on signal input from wired remote control. "L": When remote control power switch is pressed.
45	TITLE BUSY	I	Title busy signal. Normally "L".
46	VTR DD ON	O	VTR DC-DC converter control signal. "H": When power supply switch is set to "PLAYER" or "Camera".
47	CAMERA DD ON	O	CAMERA DC-DC converter control signal. "H": When power supply switch is set to "CAMERA".
48	$\overline{\text{VIDEO DA CS}}$	O	Chip select signal to video, audio circuit EVR (ICs 304 to 306 on VS-101 board).
49	AUTO LOCK LED	O	Auto-lock LED ON/OFF signal. "H" when LED is lit.
50	$\overline{\text{VIDEO CS}}$	O	Chip select signal to video Y signal process IC (IC401 on VS-101 board).
51	$\overline{\text{VTR COSMO CS}}$	O	Chip select signal to mechanism control microprocessor (IC153 on VS-101 board).
52	$\overline{\text{SG CS}}$	O	Chip select signal to SYNC generator (IC710 on VC-135 board).
53	CG STBY	O	Chip select signal to character generator (IC927 on VC-135 board).
54	VDD		+5V power supply.
55	XT1	I	32 kHz crystal oscillation circuit (for clock).
56	XT2		
57	NC		Connected to +5V.
58	X1	I	4.19 MHz crystal oscillation circuit (for system clock).
59	X2	I	
60	KEY IN 0	I	Key matrix input. V period "L" pulse input when corresponding key is pressed. "H" when other cases.
61	KEY IN 1	I	
62	KEY IN 2	I	
63	KEY IN 3	I	
64	KEY IN 4	I	
65	KEY IN 5	I	
66	KEY IN 6	I	
67	$\overline{\text{CC LOCK}}$	I	Cassette compartment lock switch input. "L": lock.
68	$\overline{\text{RESET}}$	I	Mode control microprocessor reset signal input. Normally "H". "L" when reset.
69	S0	O	LCD SEG Pin drive signal. Four value pulses of 0V, 1.6V, 3.2V and 4.8V.
70	S1	O	
71	S2	O	
72	S3	O	
73	S4	O	
74	S5	O	
75	S6	O	
76	S7	O	
77	S8	O	
78	S9	O	
79	S10	O	
80	S11	O	

7-4. INTERFACE

7-4-1. System Control – Video/Audio Block Interface (VS-101 BOARD)

NAME	I/O	No.	VTR MODE															CAMERA MODE					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB• PAUSE	FRAME	SLOW	SHUTTLE EDIT *14		REC *15	REC *15 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW				FWD	REV					FWD	RVS	FWD	RVS
SP/LP	O	IC153 ㉙	*1	H	H	*2	*2	*2	*2	*2	*1	*1	*1	*2	*2	*16	H/L	H/L	*16	*2	*2	H	H
VA PB MODE	O	IC153 (74)	L	L	L	H	H	H	H	H	H	H	H	H	H	L	L	L	L	H	H	H	H
AUDIO MUTE	O	IC153 ㊾	L	L	L	H	H	L	H	H	H	H	H	H	H	L	L	L	L	H	H	H	H
VIDEO MUTE *13	O	IC153 ㉒	*3	*3	*3	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*3	*3	L	L	*4	*4	*4	*4
CAM/LINE	O	IC153 ㉘	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	L	L	L	L
JOG VD	O	IC153 ⑤	L	L	L	*5	*5	L	*5	*5	*5	*5	*5	L	*5	L	L	L	L	L	*5	L	*5
RP PB MODE	O	IC153 ③	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
FE ON	O	IC153 ④	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
1/2 RF SWP	O	IC153 (100)	H	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
RF SWP	O	IC153 (99)	L	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
PB MUTE 2B	O	IC153 (91)	L	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8
PB MUTE 1B	O	IC153 (92)																					
PB MUTE 2A	O	IC153 (93)																					
PB MUTE 1A	O	IC153 (94)																					
JOG	O	IC153 ⑥	L	L	L	H	H	L	H	H	H	H	H	L	H	L	L	L	L	L	H	L	H

*1. Outputs discrimination result of the mode just before. "H": SP mode, "L": LP mode.

*2. Outputs discrimination result of the REC mode of the playback tape. "H" : SP mode, "L": LP mode.

*3. "L" when external input (video) present. "H" when other cases.

*4. "H" when tape no signal. "L" when other cases.

*5. False VD signal

*6. 12.5 Hz duty 50% pulse (synchronized with drum rotation)

*7. 25 Hz duty 50% pulse (synchronized with drum rotation)

*8. See time chart 1.

*13. "H" during load/unload of the CAMERA mode.

*14. Edit search pressed when playback pause mode.

*15. Adjustment mode.

*16. By REC MODE switch. "H": SP mode, "L": LP mode.

NAME	I/O	No.	VTR MODE															CAMERA MODE					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SERACH		PB· PAUSE	FRAME	SLOW	SHUTTLE EDIT *14		REC *15	REC *15 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW				FWD	REV					FWD	RVS	FWD	RVS
$\overline{REC2B}$	O	IC153 (95)	H	H	H	H	H	H	H	H	H	H	H	H	H	*9	H	H	*9	H	H	H	H
$\overline{REC1B}$	O	IC153 (96)																					
$\overline{REC2A}$	O	IC153 (97)																					
$\overline{REC1A}$	O	IC153 (98)																					
SP/$\overline{LP}$ DET	I	IC153 (67)	L	*10	*10	*10	*10	L	*10	*10	*10			L	*10	H	H	H	H	L	*10	L	*10
CLOG	I	IC153 (84)	H	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	H	*11	*11	H	*11	*11	*11	*11
VTR SYNC	I	IC153 (66)	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12

*9. See time chart 2.

*10. "H": SP recording area on tape. "L": LP recording area.

*11. "H": no recording area or drop out area on tape. Head clog detection input.

*12. Composite sync signal input separated from line input video signal, camera video signal or playback video signal. (polarity +)

*14. Edit search pressed when playback pause mode.

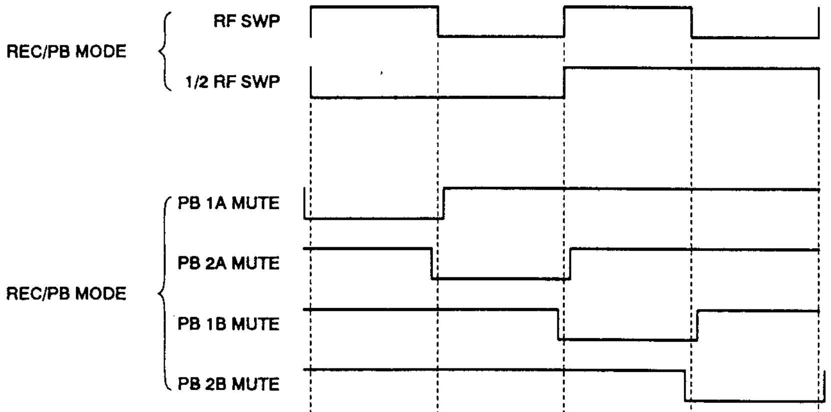
*15. Adjustment mode.

7-4-2. System Control – Servo Block Interface (VS-101 Board)

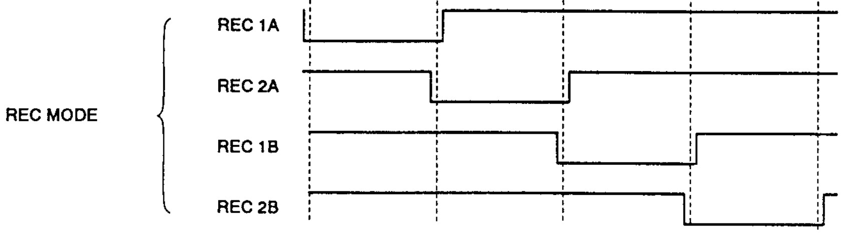
NAME	I/O	No.	VTR MODE															CAMERA MODE					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB· PAUSE	FRAME	SLOW	SHUTTLE EDIT *13		REC *14	REC *14 PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW				FWD	REV					FWD	RVS	FWD	RVS
T.REEL FG	I	IC153 (62)	–	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
S.REEL FG	I	IC153 (61)	–	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
ATF ERROR	I	IC153 (60)	–	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
DRUM PG	I	IC153 (68)	–	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3
DRUM FG	I	IC153 (69)	–	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP FG/ CFG HMS	I	IC153 (70), (71)	–	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5
CAP ON	O	IC153 ①	L	H	H	H	H	H	H	H	L	*8	*8	H	H	H	L	L	H	H	H	H	H
REF PILOT	O	IC153 (85)	*7	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
RP PB MODE	O	IC153 ③	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
DRUM FWD/$\overline{\text{RVS}}$ *10	O	IC153 ㉟	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
CAP FWD/ $\overline{\text{RVS}}$	O	IC153 ②	L	H	L	H	L	H	H	L	L	*8	*8	H	L	H	L	L	H	H	L	H	L
DRUM PWM	O	IC153 (76)	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9
CAP PWM	O	IC153 (75)	L	*9	*9	*9	*9	*9	*9	*9	L	*9	*9	*9	*9	*9	L	L	*9	*9	*9	*9	*9
$\overline{\text{LM LIM CONT}}$ *11	O	IC153 ㉝	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
DRUM ON *12	O	IC153 ㉞	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H

*1. Pulse input amplitude modulated by reel rotation. (200 msec period when REC/PB)
*2. ATF error voltage input
*3. One PG pulse input per one drum rotation, approx. 37.5 Hz.
*4. Six PG pulses input per one drum rotation, approx. 225 Hz.
*5. 360 FG pulses input per one capstan rotation. Approx. 1145.5 Hz when REC/PB (SP).
*6. Four frequencies output synchronized with drum rotation. f1=101.024 kHz, f2=117.188 kHz, f3=162.760 kHz and f4=146.484 kHz
*7. f2 (117.188 kHz) output
*8. "H" pulse when tape run.
*9. 21.85 μsec period PWM signal
*10. Normally "H". Temporary "L" only when load/unload (drum reverse rotation).
*11. Temporary "H" only when cassette loading (finger catch protection).
*12. "H": approx. 1.3 Vdc
*13. Edit search pressed when playback pause mode.
*14. Adjustment mode.

TIME CHART 1


REC/PB MODE
RF SWP
1/2 RF SWP
REC/PB MODE
PB 1A MUTE
PB 2A MUTE
PB 1B MUTE
PB 2B MUTE

TIME CHART 2


REC MODE
REC 1A
REC 2A
REC 1B
REC 2B

SECTION 8
CAMERA SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 234.

8-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

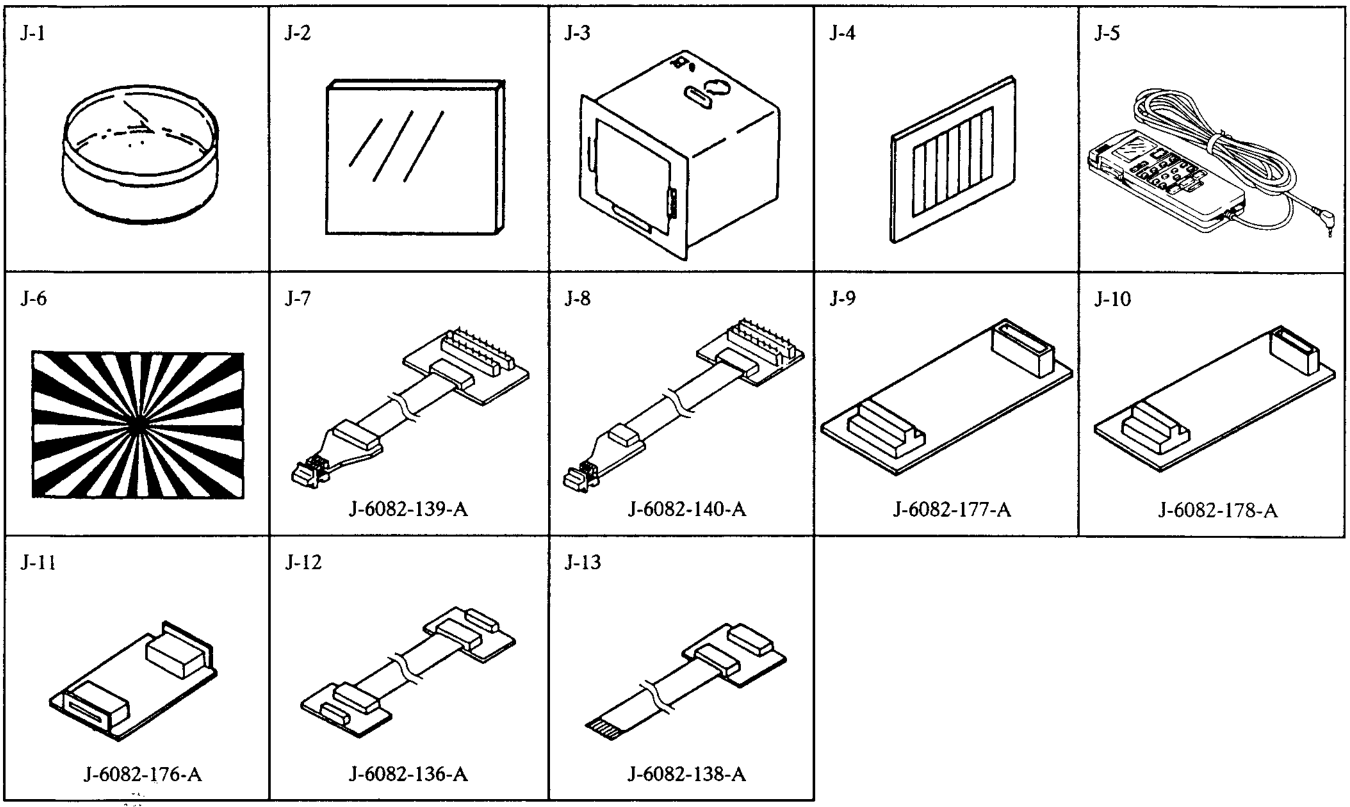
8-1-1. List of Service Tools

- Oscilloscope
- Adjusting driver
- Stabilized power supply
- Color monitor
- Vectorscope
- Digital voltmeter

Ref. No.	Name	Part Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	Max gain adjustment (2 used) White balance check
	ND filter 0.4	J-6080-806-A	Max gain adjustment
	ND filter 0.3	J-6080-818-A	White balance adjustment
	ND filter 0.1	J-6080-807-A	Max gain adjustment
J-3	Pattern box PTB-500	J-6029-140-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjusting remote control unit (RM-95-remodeled in part)[Note 1]	J-6082-053-B	
J-6	Siemens star	J-6080-875-A	For checking flange back
J-7	Measuring pin jig for camera section	J-6082-139-A	For camera section adjustment
J-8	Measuring pin jig for video section	J-6082-140-A	For video section adjustment
J-9	Extension cord (48P, 0.8 mm)	J-6082-177-A	For extension between CF-4 board and VC-135 board (CN922)
J-10	Extension cord (24P, 0.8 mm)	J-6082-178-A	For extension between VD-22 board (CN001) and SE-26 board (CN101) (During the repair of the camera section)
J-11	Relay board (21P, 0.5 mm)[Note 2]	J-6082-176-A	For extension between the lens block (FPC) and VC-135 board (CN851) (During the repair of the camera section)
J-12	Extension cord (16P, 0.8 mm)	J-6082-136-A	For extension between CD-108 board (CN301) and VC-135 board (CN801) (During the repair of the camera section)
J-13	Extension cord (20P, 0.5 mm)[Note 2]	J-6082-138-A	For extension between the lens block (FPC) and VC-135 board (CN851) (During the repair of the camera section)

Note 1: If the micro processor IC in the adjusting remote control unit is not the new micro processor (UPD7503G-C56-12), the switchover of the page cannot be carried out. In this case, replace with the new micro processor (8-759-148-35).

Note 2: The extension code (J-6082-138-A) is also attached with a 21P, 0.5 mm code. Connect this code to the relay board (J-6082-176-A) for extensions between the lens block (FPC) and VC-135 board (CN851).


J-1

J-2

J-3

J-4

J-5

J-6

J-7 J-6082-139-A

J-8 J-6082-140-A

J-9 J-6082-177-A

J-10 J-6082-178-A

J-11 J-6082-176-A

J-12 J-6082-136-A

J-13 J-6082-138-A

Fig. 8-1.

8-1-2. Preparations

Note 1: For further details on how to remove the cabinet and each board, refer to "2. Disassembly".

Note 2: When performing adjustments only, it is not necessary to separate the lens block and VC-135 board.

1) Connect the equipments for adjustment as shown in Fig. 8-3.
2) It is not necessary to connect the front panel assembly (including the MA-174 and RM-68 boards) and AU-151 board (audio board).
3) The EVF (Electronic viewfinder) is required for checking the white balance mode and shutter speeds. The same contents will be displayed on the monitor TV by turning on the data screen. If the EVF is not required, remove the VS-101 board CN301.

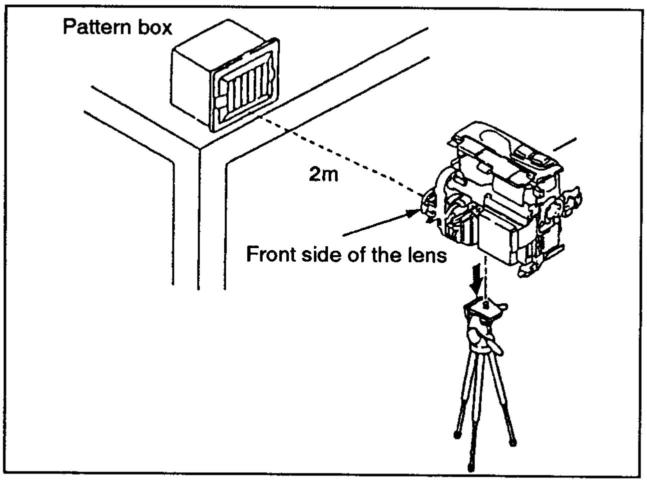
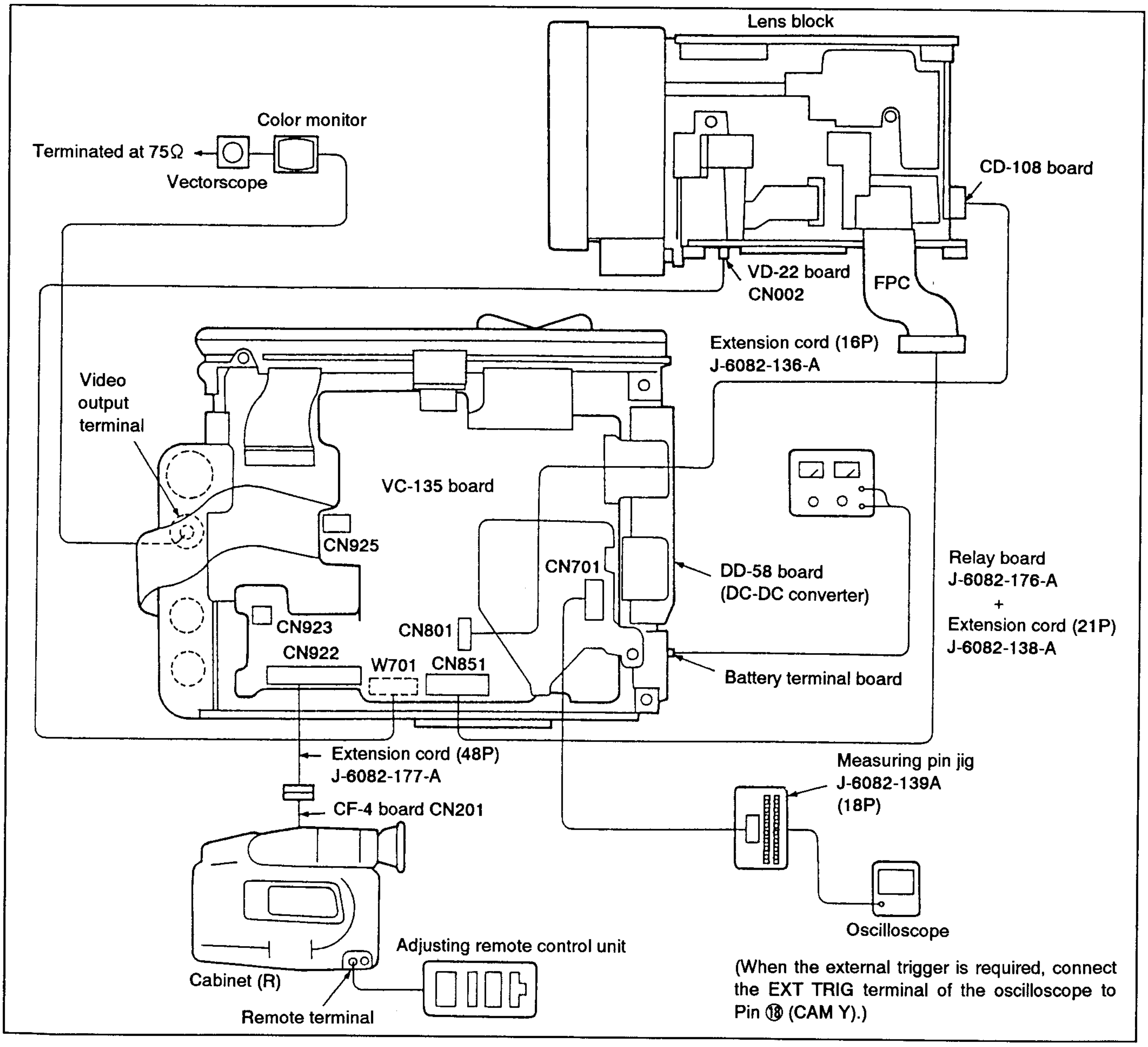

Pattern box
2m
Front side of the lens

Fig. 8-2.


Lens block
Color monitor
Terminated at 75Ω
Vectorscope
CD-108 board
VD-22 board CN002
FPC
Extension cord (16P) J-6082-136-A
Video output terminal
VC-135 board
CN925
CN701
DD-58 board (DC-DC converter)
Relay board J-6082-176-A + Extension cord (21P) J-6082-138-A
CN923
CN801
CN922
W701
CN851
Battery terminal board
Extension cord (48P) J-6082-177-A
CF-4 board CN201
Measuring pin jig J-6082-139A (18P)
Oscilloscope
Adjusting remote control unit
Cabinet (R)
Remote terminal

(When the external trigger is required, connect the EXT TRIG terminal of the oscilloscope to Pin ⑱ (CAM Y).)

Fig. 8-3.

8-1-3. Precautions

1. Switch settings

Adjust the switches to the following positions, and perform the adjustments without inserting the tape, unless specified otherwise.

1. Camera/player power switch (FK-4 board S119) ···Camera
2. Standby switch (FK-4 board S118) ······················ Standby
3. Steady shot switch (CF-4 board S216) ·························Off
4. Auto-lock switch (CF-4 board S217) ···························Off
5. Focus button (CF-4 board S213)···························Manual
6. Shutter speed button (CF-4 board S312) ······· Normal (1/50)
7. Brightness button (CF-4 board S211)················ Automatic

2. Adjustment Procedure

Perform in the given order as a rule.

3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the picture frame as shown in Fig. 8-4. if adjustments are performed using the color bar chart.
   (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and adjust the zoom lever so that the white pattern becomes the same size and is in the same position as the color bar chart (Standard picture frame).

Color bar chart standard picture frame

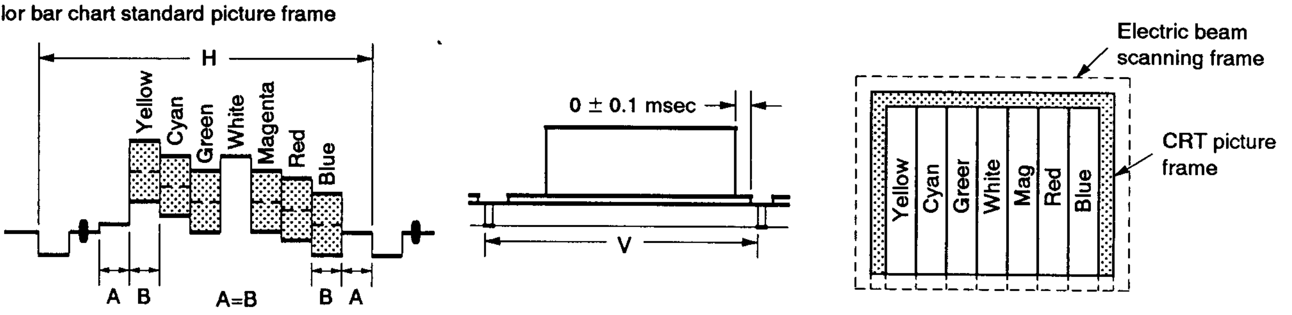

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A
0 ± 0.1 msec
V
Electric beam scanning frame
CRT picture frame
Yellow
Cyan
Greer
White
Mag
Red
Blue

Fig. a. (Video input/output terminal output waveform)

Fig. b. (TV Monitor picture)

Adjust the camera zoom and direction to obtain the output waveform shown in Fig. a and the TV monitor picture shown in Fig. b.

Fig. 8-4.

3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm× 841 mm) paper to a black one, and make the chart shown in Fig. 8-5.

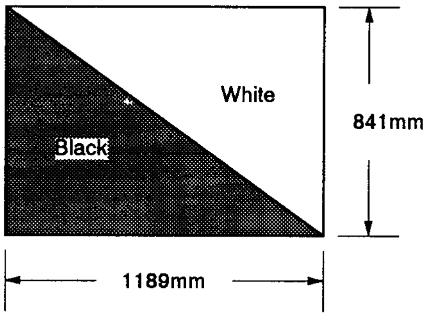

White
Black
841mm
1189mm

Fig. 8-5.

Note: Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

8-1-4. Adjusting Remote Control Unit

The camera section is adjusted by changing the constant and the coefficient of the digital signal processing calculation, or modifying the output voltage of EVR IC (VC-135 board IC705). These processes are carried out by the camera micro processor (VC-135 board IC702). This micro processor reads the data written in the non-volatile memory (VC-135 board IC701: EEPROM), and transmits it to the digital signal processing circuit and EVR.

The adjusting remote control unit is used for rewriting the adjustment data written in the non-volatile memory necessary for performing the adjustments.

The adjusting remote control unit uses the remote control signal line (LANC) to correspond mutually with the camera micro processor. The page, address and the up/down command of the data can be transmitted from the remote control unit to the camera micro processor. On the other hand, the page, address, and data can also be transmitted the other way round.

1. Using the adjusting remote control unit

1) Connect the adjusting remote control unit to the remote terminal (LJ-13 board J511).
2) Adjust the HOLD switch of the adjusting remote control unit to HOLD (SERVICE position).
   If it has been properly connected, the LCD on the adjusting remote control unit will show the display in Fig. 8-6.

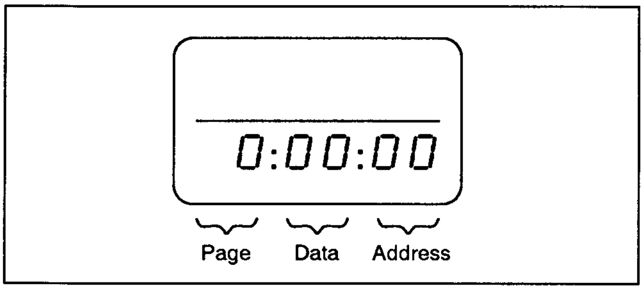


Fig. 8-6.

3) Operate the adjusting remote control unit as follows.
   - Changing the page
     The page will increase when the EDIT SEARCH+ button is pressed. It will decrease when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0 1 2 3 4 5 6 7 8 9 A B C D E F
Display on LCD	0 1 2 3 4 5 6 7 8 9 A b c d E F
Decimal notation conversion value	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Table 8-1.

   - Changing the address
     The address will increase when the FF (▸▸) button is pressed, and decrease when the REW (◂◂) button is pressed. There are altogether 256 addresses, from 00 to FF. However, the addresses which are not used for the adjustments will not be displayed.
   - Changing the data (Data setting)
     The data will increase when the PLAY (▶) button is pressed, and decrease when the STOP (■) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     It is necessary to press the PAUSE button to write the adjustment data (F page, E page, D page) in the non-volatile memory.
     (The new adjustment data will not be recorded in the non-volatile memory if this operation is not performed.)
4) Select page: 6, address: 00, and adjust the data to 01 (window OFF adjustment mode) or 11 (window ON adjustment mode). This releases the write protect of page F, and the camera section (F page) can be adjusted.
   (To adjust the titler system (D page), adjust the data of page: 01, address: 00 to 01, and release the protect of page D.)
5) After completing all adjustments, turn off the main power (6.3V) once. This can release the adjustment mode (adjustment modes other than page E and page F).

2. Precautions upon using the adjusting remote control unit

The correct adjustment data may be erased at times, due to operation errors of the adjusting remote control unit. To prevent this from occurring, it is recommended that all adjustment data be recorded in the memory before beginning adjustments, and the new adjustment data be recorded in the memory after each adjustment.

8-1-5. Page F Address List

Note 1: The data listed in the adjustment data memo column are fixed values.

Note 2: The adjustment data initial values are the values immediately after performing "Page F, Page E Data Initialization" and "Page F, Page E Data Modification". They are different from the values after performing all the adjustments.

Address	Name	Function [ ] indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
00	ID	Set ID	51	51
01	FADER LEVEL	AE REF level modification during fader	E0	E0
02	FADER ENDTIM	The setting of the AE REF modulation time during fader	10	10
03	CS SL	Carrier balance adjustment	35	
04	VSUB	CCD imager V SUB adjustment [IC705 ③]	80	
05	VPGH	CCD imager VRG adjustment [IC705 ④]	80	
06	VREF Y	Camera core Y D/A standard voltage, SYNC level adjustment [IC705 ⑤]	7B	
07	VREF C	Camera core CHROMA D/A standard voltage, BURST level adjustment [IC705 ⑥]	99	
08	HALL GAIN	Hall amplifier gain adjustment [IC705 ⑦] HALL adjustment	75	
09	HALL OFFSET	Hall amplifier offset adjustment [IC705 ⑧]	79	
0A	E LOWLIGHT START	Low luminance intensity REF level modulation start setting	20	20
0B	REF 2V	2V standard voltage for hall device [IC705 ⑫]	68	68
0C	AD REF	Black level setting during A/D conversion, A/D off set adjustment [IC705 ⑬]	72	
0D	CORE DETH	CCD correction control	04	04
0E	CORE VTR DELAY	1HDL longitudinal setting during VTR playback	16	16
0F	CORE APCN4	Horizontal aperture setting	B5	B5
10	CORE APCN5	Vertical aperture setting	3F	3F
11	CORE EFECT	Special effect control	A0	A0
12	CORE MATR	BLUE matrix constant	26	26
13	CORE MATB	RED matrix constant	6D	6D
14	CORE BURST LEVEL	Burst flag level setting, color modulation ON/OFF Data — Adjustment mode 38 — Normal level 3A — Color modulation stopped	38	38
15	CORE CHROMA DLY	Y/C delay adjustment	04	04
16	CORE Y SETUP	Set up level setting	02	02
17	CORE VHAPCN	Slice and level setting of the aperture signal	16	16
18	CORE B-Y GAIN	B–Y GAIN Color reproduction adjustments	13	
19	CORE R-Y GAIN	R–Y GAIN	11	
1A	CORE R-Y HUE	R–Y HUE	00	
1B	CORE B-Y HUE	B–Y HUE	00	
1C	CS/APCCUT	Low luminance intensity aperture and chroma suppress level	24	24

Table 8-2 (1).

Address	Name	Function [ ] Indicate the adjustment voltage output terminal		Adjustment data	
				Initial value	Memo column
1D	NEXT LINE DEFECT BIT	CCD correction pattern	CCD imager correction data write	00	
1E	CCD DEFECT0	CCD correction data		00	
1F	CCD DEFECT1	CCD correction data		00	
20	CCD DEFECT2	CCD correction data		00	
21	CCD DEFECT3	CCD correction data		00	
22	CCD DEFECT4	CCD correction data		00	
23	CCD DEFECT5	CCD correction data		00	
24	CCD DEFECT6	CCD correction data		00	
25	CCD DEFECT7	CCD correction data		00	
26	CCD DEFECT8	CCD correction data		00	
27	CCD DEFECT9	CCD correction data		00	
28	CCD DEFECT10	CCD correction data		00	
29	CCD DEFECT11	CCD correction data		00	
2A	CCD DEFECT12	CCD correction data		00	
2B	CCD DEFECT13	CCD correction data		00	
2C	CCD DEFECT14	CCD correction data		00	
2D	RREF L	3200k Red standard data LSB	Auto white balance preset adjustment	72	
2E	RREF H	3200k Red standard data MSB		5F	
2F	GREF L	3200k Green standard data LSB		D4	
30	GREF H	3200k Green standard data MSB		63	
31	BREF L	3200k Blue standard data LSB		3B	
32	BREF H	3200k Blue standard data MSB		2C	
33	RCONTREF	3200k RCONT adjustment value	Pre-white balance adjustment	42	
34	BCONTREF	3200k BCONT adjustment value		4A	
35	AWB NOWM R	Red regular correction coefficient	Auto white balance adjustment	7E	
36	AWB NORM B	Blue regular correction coefficient		96	
37	AWB SHUT IN	Indoor determination shutter data		A8	A8
38	ABW SHUT OUT	Outdoor determination shutter data		A0	A0
39	AWB IRIS IN	Indoor determination hall data	IRIS IN/OUT adjustment	79	
3A	AWB IRIS OUT	Outdoor determination hall data		7F	
3B	AWB G LEVEL	High luminance section green integral level		02	02
3C	AWB G WIDTH	High luminance section green integral level range		03	03
3D	DMAT HUE	Variable linear matrix HUE coefficient	Linear matrix adjustment	00	
3E	DMAT GAIN	Variable linear matrix GAIN coefficient		00	
3F	AWB SELECT	AWB mode selection		00	00
40	AWB DIFF	Standard difference from the outdoor fixed value		0A	0A
41	AWB BOTTOM SLP R	AWB incoming frame bottom R coefficient		30	30
42	AWB BOTTOM SLP B	AWB incoming frame bottom B coefficient		58	58
43	AWB MIDDLE SLP R	AWB incoming frame middle R coefficient		62	62
44	AWB MIDDLE SLP B	AWB incoming frame middle B coefficient		47	47
45	AWB TOP SLP R	AWB incoming frame top R coefficient		6C	6C
46	AWB TOP SLP B	AWB incoming frame top B coefficient		1A	1A

Table 8-2 (2).

<table>
<tr><th rowspan="2">Address</th><th rowspan="2">Name</th><th rowspan="2">Function
[ ] Indicate the adjustment voltage output terminal</th><th colspan="2">Adjustment data</th></tr>
<tr><th>Initial value</th><th>Memo column</th></tr>
<tr><td>47</td><td>AWB KEIKO R</td><td>AWB incoming frame fluorescent light R coefficient</td><td>66</td><td>66</td></tr>
<tr><td>48</td><td>AWB KEIKO B</td><td>AWB incoming frame fluorescent light B coefficient</td><td>18</td><td>18</td></tr>
<tr><td>49</td><td>AWB BOTTOM UP</td><td>AWB incoming frame bottom upper value</td><td>8C</td><td>8C</td></tr>
<tr><td>4A</td><td>AWB BOTTOM DWN</td><td>AWB incoming frame bottom lower value</td><td>6B</td><td>6B</td></tr>
<tr><td>4B</td><td>AWB MIDDLE UP</td><td>AWB incoming frame middle upper value</td><td>B8</td><td>B8</td></tr>
<tr><td>4C</td><td>AWB MIDDLE DWN</td><td>AWB incoming frame middle lower value</td><td>9F</td><td>9F</td></tr>
<tr><td>4D</td><td>AWB TOP UP</td><td>AWB incoming frame top upper value</td><td>80</td><td>80</td></tr>
<tr><td>4E</td><td>AWB TOP DWN</td><td>AWB incoming frame top lower value</td><td>66</td><td>66</td></tr>
<tr><td>4F</td><td>AWB KEIKO</td><td>AWB incoming frame fluorescent light output lower value</td><td>6C</td><td>6C</td></tr>
<tr><td>50</td><td>AWB KEIKO DWN</td><td>AWB incoming frame fluorescent light lower value</td><td>5C</td><td>5C</td></tr>
<tr><td>51</td><td>AWB R TOP LMT</td><td>AWB incoming frame Rcont upper value</td><td>6C</td><td>6C</td></tr>
<tr><td>52</td><td>AWB R DWN LMT</td><td>AWB incoming frame Rcont lower value</td><td>20</td><td>20</td></tr>
<tr><td>53</td><td>AWB B TOP LMT</td><td>AWB incoming frame Bcont upper value</td><td>83</td><td>83</td></tr>
<tr><td>54</td><td>AWB B IN TOP</td><td>AWB incoming frame Bcont</td><td>67</td><td>67</td></tr>
<tr><td>55</td><td>AWB B IN MAX</td><td>AWB incoming frame Bcont</td><td>5C</td><td>5C</td></tr>
<tr><td>56</td><td>AWB B OUT MIN</td><td>AWB incoming frame Bcont</td><td>5C</td><td>5C</td></tr>
<tr><td>57</td><td>AWB B OUT DWN</td><td>AWB incoming frame Bcont</td><td>4A</td><td>4A</td></tr>
<tr><td>58</td><td>AWB B DWN LMT</td><td>AWB incoming frame Bcont lower value</td><td>20</td><td>20</td></tr>
<tr><td>59</td><td>AWB LL LMT</td><td>Low luminance intensity limiter</td><td>06</td><td>06</td></tr>
<tr><td>5A</td><td>AWB T M DIVID</td><td>AWB incoming frame upper, middle border value</td><td>5B</td><td>5B</td></tr>
<tr><td>5B</td><td>AWB B M DIVID</td><td>AWB incoming frame middle, lower border value</td><td>3C</td><td>3C</td></tr>
<tr><td>5C</td><td>AWB DELAY TM</td><td>AWB tracking speed
<table>
<tr><th>Data</th><th>Adjustment mode</th></tr>
<tr><td>01</td><td>High speed tracking mode</td></tr>
<tr><td>0C</td><td>Normal</td></tr>
</table></td><td>0C</td><td>0C</td></tr>
<tr><td>5D</td><td>AWB FAST TM</td><td>AWB initial high speed tracking amount</td><td>40</td><td>40</td></tr>
<tr><td>5E</td><td>AWB OUT HYS OFF</td><td>AWB outdoor hysteresis off difference</td><td>0C</td><td>0C</td></tr>
<tr><td>5F</td><td>AWB OUT B HYS</td><td>AWB outdoor hysteresis amount</td><td>06</td><td>06</td></tr>
<tr><td>60</td><td>AWB MODE</td><td>AWB adjustment mode
<table>
<tr><th>Data</th><th>Adjustment mode</th></tr>
<tr><td>00</td><td>Normal</td></tr>
<tr><td>D0</td><td>AWB adjustment mode</td></tr>
<tr><td>F1</td><td>Sampling display mode</td></tr>
</table></td><td>00</td><td>00</td></tr>
<tr><td>61</td><td>AE REFL</td><td>Reference value (lower) for AE</td><td>00</td><td>00</td></tr>
<tr><td>62</td><td>AE REFH</td><td>Reference value (upper) for AE</td><td>1B</td><td>1B</td></tr>
<tr><td>63</td><td>AGC MIN</td><td>AGC MIN value (AGCREF value), IRIS level adjustment</td><td>E3</td><td></td></tr>
<tr><td>64</td><td>AE MIML</td><td>Low luminance intensity side limiter (MAXGAIN), MAX GAIN adjustment</td><td>32</td><td></td></tr>
<tr><td>65</td><td>AE MAXL</td><td>High luminance intensity side limiter (lower)</td><td>80</td><td>80</td></tr>
<tr><td>66</td><td>IRIS OFFSET</td><td>Iris ROM table OPEN side offset</td><td>D0</td><td>D0</td></tr>
<tr><td>67</td><td>AE KEISU</td><td>Correction coefficient during detection weighting</td><td>00</td><td>00</td></tr>
</table>

Table 8-2 (3).

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
68	AE FUNCTION	SW for turning each AE function ON and OFF	42	42
69	BL HOSEIH	Forcible back light level setting (upper)	40	40
6A	JITEISU DOWN	Constant during loop response, DOWN side	28	28
6B	JITEISU UP	Constant during loop response, UP side	0D	0D
6C	AE KNEE	KNEE setting value for AE	FF	FF
6D	ORETEN SET	Variable point due to time constant error amount	13	13
6E	OMOMIOUT	Outer frame weighting amount	40	40
6F	AFC WIDE	Coefficient required for the ANF integral loop	03	03
70	AFC GAIN	Loop gain of the flickerless loop	01	01
71	AFC LIMIL	Limiter corresponding to the error rate (Lower)	60	60
72	HIST P KEISU	Histocomp level setting P for counter light determination	20	20
73	HIST H KEISU	Histocomp level setting H for counter light determination	E0	E0
74	HIST L KEISU	Histocomp level setting L for counter light determination	90	90
75	GYKOU JITEISU	Constant during auto back light response	08	08
76	SUBN LIMIT	Limiter for counter light determination	40	40
77	FUZZY RULE1	Correction amount 1 for auto back light	90	90
78	FUZZY RULE2	Correction amount 2 for auto back light	C0	C0
79	FUZZY RULE3	Correction amount 3 for auto back light	B0	B0
7A	FUZZY RULE4	Correction amount 4 for auto back light	A0	A0
7B	FUZZY RULE5	Correction amount 5 for auto back light	70	70
7C	FUZZY RULE6	Correction amount 6 for auto back light	80	80
7D	FUZZY RULE7	Correction amount 7 for auto back light	A0	A0
7E	FUZZY RULE8	Correction amount 8 for auto back light	98	98
7F	FUZZY RULE9	Correction amount 9 for auto back light	90	90
80	FUZZY RULE10	Correction amount 10 for auto back light	78	78
81	IRIS MIN L	Not used		
82	IRIS MIN H	Not used		
83	DELTA SHUT GAIN	Not used		
84	AE WAKUH	Frame data for AE detection (vertical line)	0F	0F
85	AE WAKUV	Frame data for AE detection (horizontal line)	4F	4F
86	WIDE LIMIT	ZOOM limiter WIDE (lower) Flange back adjustment	DE	
87	WIDE LIMITH	ZOOM limiter WIDE (upper)	02	
88	TELE LIMIT	ZOOM limiter TELE (lower)	22	
89	TELE SIMITH	ZOOM limiter TELE (upper)	1D	
8A	STEP ZERO	Flange back value	65	
8B	STEP ZERO SPAN (VAP ONLY)	Flange back value 2	BE	
8C	ZOOM SPD FAST	Zoom speed (fast)	73	73
8D	ZOOM SPD SUPER	Zoom speed (For adjustment)	76	76
8E	ZS INIT SLOW	Zoom speed initial value (slow)	76	76
8F	ZS INIT FAST	Zoom speed initial value (fast)	76	76
90	ZMSPD DAMIN	Zoom speed D/A MIN value	3D	3D
91	ZS K	Zoom servo coefficient K	11	11

Table 8-2 (4).

<table>
<tr><th rowspan="2">Address</th><th rowspan="2">Name</th><th rowspan="2">Function
[ ] indicate the adjustment voltage output terminal</th><th colspan="2">Adjustment data</th></tr>
<tr><th>Initial value</th><th>Memo column</th></tr>
<tr><td>92</td><td>ZS L</td><td>Zoom servo coefficient L</td><td>04</td><td>04</td></tr>
<tr><td>93</td><td>ZP HYS</td><td>Zoom potential hysteresis</td><td>03</td><td>03</td></tr>
<tr><td>94</td><td>ZOOM SPD SLOW</td><td>Zoom speed (slow)</td><td>29</td><td>29</td></tr>
<tr><td>95</td><td>AF MD2THL</td><td>MODE2 THR</td><td>20</td><td>20</td></tr>
<tr><td>96</td><td>MAXCHG THR</td><td>MAX value renewal THR</td><td>1A</td><td>1A</td></tr>
<tr><td>97</td><td>ERR THL</td><td>Wobbling width THR</td><td>18</td><td>18</td></tr>
<tr><td>98</td><td>WOB INTV</td><td>Wobbling second interval</td><td>04</td><td>04</td></tr>
<tr><td>99</td><td>ERRPOL THR</td><td>MODE2 error possible THR</td><td>13</td><td>13</td></tr>
<tr><td>9A</td><td>MAXCHK THR</td><td>MAX CHECK THR</td><td>12</td><td>12</td></tr>
<tr><td>9B</td><td>REWOB THR</td><td>Wobbling second THR</td><td>0A</td><td>0A</td></tr>
<tr><td>9C</td><td>MODE2 INOUT</td><td>MODE2 speed switchover</td><td>8B</td><td>8B</td></tr>
<tr><td>9D</td><td>SMLWD THR</td><td>Small frame THR</td><td>0A</td><td>0A</td></tr>
<tr><td>9E</td><td>ZOOM PULSE LIMIT</td><td>Maximum zoom pulse value</td><td>EE</td><td>EE</td></tr>
<tr><td>9F</td><td>ZOOM RIZE</td><td>Zoom rise minimum speed time</td><td>0A</td><td>0A</td></tr>
<tr><td>A0</td><td>FB CURVEPEAKL</td><td>Constant for flange back adjustment</td><td>F5</td><td>F5</td></tr>
<tr><td>A1</td><td>FB CURVEPEAKH</td><td>Constant for flange back adjustment</td><td>0B</td><td>0B</td></tr>
<tr><td>A2</td><td>FB ZOOMSH</td><td>Constant for flange back adjustment</td><td>5D</td><td>5D</td></tr>
<tr><td>A3</td><td>FB ZOOMSH</td><td>Constant for flange back adjustment</td><td>06</td><td>06</td></tr>
<tr><td>A4</td><td>LIMITREST WIDE</td><td>Zoom limiter WIDE side</td><td>14</td><td>14</td></tr>
<tr><td>A5</td><td>LIMITREST TELE</td><td>Zoom limiter TELE side</td><td>0F</td><td>0F</td></tr>
<tr><td>A6</td><td>FB PEAKTHR</td><td>Constant for flange back adjustment</td><td>FF</td><td>FF</td></tr>
<tr><td>A7</td><td>FB FOCUSZERO</td><td>Constant for flange back adjustment</td><td>1C</td><td>1C</td></tr>
<tr><td>A8</td><td>DET IRIS ALT</td><td>Iris variation check THR</td><td>02</td><td>02</td></tr>
<tr><td>A9</td><td>DET AGC ALT</td><td>AGC variation check THR</td><td>02</td><td>02</td></tr>
<tr><td>AA</td><td>LIMIT INSURANCE</td><td>Focus limiter insurance value</td><td>02</td><td>02</td></tr>
<tr><td>AB</td><td>FOCUS MODE</td><td>Focus mode
<table>
<tr><th>Data</th><th>Adjustment mode</th></tr>
<tr><td>08</td><td>Zoom, Focus fixed</td></tr>
<tr><td>00</td><td>Normal</td></tr>
</table></td><td>00</td><td>00</td></tr>
<tr><td>AC</td><td>LENS ADJ MODE</td><td>Flange back adjustment mode
<table>
<tr><th>Data</th><th>Adjustment mode</th></tr>
<tr><td>00</td><td>Nomal</td></tr>
<tr><td>01</td><td>Flange back adjustment</td></tr>
</table></td><td>00</td><td>00</td></tr>
<tr><td>AD</td><td>LENS EMRG</td><td>Lens emergency</td><td>00</td><td>00</td></tr>
<tr><td>AE</td><td>NTSC PAL/H DEF</td><td>DELAY bit=0: NTSC, 1: PAL, bit4-7=CCD correction delay</td><td>19</td><td>19</td></tr>
<tr><td>AF</td><td>FT SW</td><td>DDS display mode switchover
<table>
<tr><th>Data</th><th>DDS display mode</th><th>Data</th><th>DDS display mode</th></tr>
<tr><td>00</td><td>Y sampling display</td><td>40</td><td>HALL data display</td></tr>
<tr><td>01</td><td>B–Y display</td><td>82</td><td>R ratio display</td></tr>
<tr><td>02</td><td>R–Y display</td><td>83</td><td>B ratio display</td></tr>
<tr><td>03</td><td>R–Y, B–Y display</td><td>B0</td><td>Focus step display</td></tr>
<tr><td>21</td><td>Normal</td><td></td><td></td></tr>
</table></td><td>21</td><td>21</td></tr>
</table>

Table 8-2 (5).

Address	Name	Function [ ] indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
B0	CORE OTHER	Core mode data 13 byte	36	36
B1	CORE Y GAIN	0 byte Y gain of core field data	3C	3C
B2	LOW LIGHT CS	Low luminance intensity, color erasure start point	80	80
B3				
B4	E LOWLIGT START 2	Low luminance intensity REF level modulation start setting 2	80	80
B5	E LOWLIGT LEVE	Low luminance intensity REF level modulation start setting	F0	F0
B6	ZOOM DROP 1	F-No drop due to zoom lens (1)	60	60
B7	ZOOM DROP 2	F-No drop due to zoom lens (2)	75	75
B8				
B9				
BA	AWB IN B HYS	AWB indoor B hysteresis amount	04	04
BB	AWB IN R HYS	AWB indoor R hysteresis amount	02	02
BC	AWB KAKE NORM R	Set to 1000H by multiplying with reference value of ADR: 35 (NORM R)	20	20
BD	AWB KAKE NORM B	Set to 1000H by multiplying with reference value of ADR: 36 (NORM B)	40	40
BE	MF STEP CHNGE	MODE2 THR coefficient	06	06
BF	ZOOM SPEED SUPER SLOW		07	07
C0	ZOOM INT SUPER SLOW		14	14
C1	AF CONTROL FLAG		0E	0E
C2	AE Y THR	AE variation THR. 1 during low luminance intensity	28	28
C3	AE Y MIN	AE variation THR. 2 during low luminance intensity	20	20
C4	MD2 SPD	Focus speed during MODE2	61	61
C5	AE CHECK	Re-start up AE THR	10	10
C6	LOWCON THR	LOW CON determination THR.1 during MODE2	10	10
C7	LOWCON THR 2	LOW CON determination THR.2 during MODE2	20	20
F0		Input column of the unit ID No., etc. Not related to unit operations.	FF	
F1			FF	
F2			FF	
F3			FF	
F4			FF	
F5			FF	
F6			FF	
F7			FF	
F8			FF	
F9			FF	
FA			FF	
FB			FF	
FC			FF	
FD			FF	
FE			FF	
FF			FF	

Table 8-2 (6).

8-1-6. Page E Address List

Note 1: The data listed in the adjustment data memo column are fixed values.

Note 2: The adjustment data initial values are the values immediately after performing "Page F, Page E Data Initialization" and "Page F, Page E Data Modification". They are different from the values after performing all the adjustments.

Address	Name	Function [ ] Indicate the adjustment voltage output terminal	Adjustment data	
			Initial value	Memo column
00	a0 V SENSOR GAIN	Pitch adjustment gain } VAP adjustment	80	
01	a1 V SENSOR GAIN	YAW adjustment gain	80	
02	a1 COMPLETE		00	00
03	a0 V LIMIT 1	PITCH initial limiter	FF	FF
04	a0 V LIMIT 2	Loop limiter in PITCH integral	7F	7F
05	a0 V CORE VALUE	PITCH core ring	10	10
06	a0 V K HPF	PITCH HPF feedback coefficient	FF	FF
07	a1 H LIMIT 1	YAW initial limiter	FF	FF
08	a1 H LIMIT 2	Loop limiter in YAW integral	7F	7F
09	a1 H CORE VALUE	YAW core ring	10	10
0A	a1 H K HPF	YAW HPF feedback coefficient	FF	FF
0B	a0 K TABLE	PITCH and YAW integral feedback coefficient table	04	04
0C	a0 ADLP CENTER PITCH	Vertical angle sensor (PITCH) input	00	00
0D	a0 ADLP CENTER PITCH+1	Vertical angle sensor (PITCH) input	80	80
0E	a0 ADLP CENTER YAW	Vertical angle sensor (YAW) input	00	00
0F	a0 ADLP CENTER YAW+1	Vertical angle sensor (YAW) input	80	80
10	a0 V REF CENTER	PITCH PWM center value	00	00
11	a0 V REF CENTER+1	PITCH PWM center value	08	08
12	a1 H REF CENTER	YAW PWM center value	00	00
13	a1 H REF CENTER+1	YAW PWM center value	08	08

Table 8-3.

8-1-7. Page 6, Page 1 Address List

The camera adjustment mode can be set by performing the following data settings at page: 6 or page: 1. (These page data can be set temporary, but when the main power (6.3V) is turned off, the original value (normal value) will be returned. Therefore, these adjustment modes can be released very simply by turning the main power off.)

(Example) The camera adjustment mode (window OFF) is set by setting data: 01 to page: 6, address: 00. The F page write protect will also be released.

1. Page 6

Address	Adjustment Mode	Data	Function
00	Camera adjustment mode	01	Camera adjustment mode (window OFF), F page write protect released
		10	Normal
		11	Camera adjustment mode (window ON), F page write protect released
01	Camera adjustment switch **Note:** To set this address adjustment mode, it is necessary to press the PAUSE button of the adjusting remote control unit after setting the data.	00	Normal
		01	IRIS OPEN, AGC HOLD
		03	IRIS CLOSE1, AGC HOLD
		05	IRIS CLOSE2, AGC MIN
		07	IRIS CLOSE3, AGC MAX
		09	ND0.5 SHUTTER (PAL=1/160, NTSC=1/190)
		0B	ND0.8 SHUTTER (PAL=1/320, NTSC=1/380)
		0D	AWB PRESET1: 3200K PRESET DATA take in
		0F	WB 3200K PRESET: Indoor white balance mode
		11	AWB PRESET2: 3200K PRESET DATA take in
		13	ZOOM HUNTING1 ZOOM SPDSLOW
		15	ZOOM HUNTING2 ZOOM SPDFAST
		1D	EEPROM PRE WRITE: Page F, Page E initial data write
05	Shutter mode	00 to 04	1/50
		05	1/120
06	FOCUS limiter ON/OFF	00	FOCUS limiter ON
		01	FOCUS limiter OFF
07	ZOOM limiter ON/OFF	00	ZOOM limiter ON
		01	ZOOM limiter OFF
08	ZOOM speed SLOW/FAST	00	Normal
		01	ZOOM speed SLOW
		02	ZOOM speed FAST
		03	ZOOM speed SUPER SLOW
09 ★	COMPLEATED FLAG	00	Camera adjustment not completed
		01	Camera adjustment completed
11 ★	ROM VERSION	05	Camera micro processor ver5
0C ★	LENS INITIAL END	00	During the initial operation of the lens
		01	Lens initial operation completed
0D ★	PHOTO INTERRUPTER MONITOR	00	inf side
		01	near side

Addresses with ★ are exclusively for reading.

Table 8-4.

2. Page 1

Address	Adjustment Mode	Data	Function
E6	VH address L		Title horizontal/vertical position (L)
E7	VH address H		Title horizontal/vertical position (H)

Table 8-5.

8-1-8. Adjustment Connector

Most of the measuring points for the camera section adjustment are concentrated on CN701 of the VC-135 board. Connect the oscilloscope etc. via the measuring pin jig (J-6082-139-A). The following table lists the terminal numbers and the signal names of CN701.

Terminal Number	Signal Name	Terminal Number	Signal Name
1	D5V	2	NC
3	ZOOM SW	4	CAM SI
5	CS EEPROM	6	CAM SO
7	$\overline{\text{CS OPD}}$	8	$\overline{\text{CAM SCK}}$
9	$\overline{\text{CS CORE}}$	10	GND
11	IRIS OUT	12	NC
13	V SUB CHK	14	CAM C
15	PG CONT	16	GND
17	NC	18	CAM Y

Table 8-6.

8-1-9. Data Processing

The calculation of the DDS display and the adjusting remote control unit display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 8-7. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation

The lower digits of the hexadecimal notation The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	② D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	80	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① B (b)	176	177	178	179	180	180	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) indicate the adjusting remote control unit display.

(Example) In the case that the DDS display and the adjusting remote control unit display are BD (b d).
As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 8-7.

8-2. CAMERA SYSTEM ADJUSTMENT

1. Power Supply Voltage Check (DD-58 board)

Subject	Option
Measuring instrument	Digital voltmeter
D5V check	
Measurement point	Pins ⑨ and ⑩ of CN202
Specified value	$4.85^{+0.15}_{-0.05}$ Vdc
M5V (1) check	
Measurement point	Pins ⑭ and ⑮ of CN202
Specified value	4.98 ± 0.15 Vdc
CAM 5V check	
Measurement point	Pins ①, ③ and ⑥ of CN202
Specified value	4.90 ± 0.15 Vdc
CAM 15V check	
Measurement point	Pin ② of CN202
Specified value	15.0 ± 0.15 Vdc
CAM –9V check	
Measurement point	Pin ④ of CN202
Specified value	–8.40 ± 0.40 Vdc

Checking method:

1) Check that each power supply voltage satisfies the specified value.
   If not, refer to "Power System Adjustment" in "VIDEO SECTION ADJUSTMENTS".

2. Page F, Page E Data Initialization

Note: It is necessary to perform all adjustments of the camera section from the beginning again if the data of page F, page E has been initialized.

Initializing method:

1) Release the protect.
   Page: 6, address: 00, data: 01.
2) Check that the data of page: 6, address: 09 is 00.
   (Display indicating that page F, page E data can be initialized)
3) Set data: 1D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Page F, page E data initialization execution.
   The data of all addresses of page F, page E will be initialized.)
4) Check that the data of page: 6, address: 09 is 01.
   (Displays that the initialization of page F, page E data has been completed)
5) Set data: 00 to page: 6, address: 01. and press the PAUSE button of the adjusting remote control unit.
   (Releases the page F, page E data initialization mode)
6) After performing "Page F, page E data modification", perform all the adjustments of the camera section (page F and page E).

3. Page F, Page E Data Modification

The data (initial data) that is automatically written on page F, page E after the initialization of the page F, page E data is different from the initial data for adjustment. Change the data by manual input, and arrange it.

Note: When changing the data, to write the data to the non-volatile memory, press the PAUSE button of the adjusting remote control unit every time the new data is set.

Page F

Address	Data
00 (ID)	51
14 (CORE BURST LEVEL)	38
15 (CORE CHROMA DLY)	04
16 (CORE Y SETUP)	02
17 (CORE VHAPCN)	04
1A (CORE R–Y HUE)	00
1B (CORE B–Y HUE))	00
5C (AWB DELAY TM)	0C
62 (AE REF H)	1B
68 (AE FUNCTION)	42
6A (JITEISU DOWN)	28
6B (JITEISU UP)	0D
8C (ZOOM SPD FAST)	73
8D (ZOOM SPD SUPER)	76
8E (ZS INIT SLOW)	76
8F (ZS INIT FAST)	76
94 (ZOOM SPD SLOW)	29
9E (ZOOM PULSE LIMIT)	EE
AE (NTSC PAL/H DEF DELAY)	19
AF (FF SW)	21
B1 (CORE Y GAIN)	3C
C0 (ZOOM INT SUPER SLOW)	14

Page E

Address	Data
05 (a0 V CORE VALUE)	10
09 (a1 H CORE VALUE)	10

[Distinguishing the Camera Micro Processor (IC702) Versions]

Each version can be distinguished by looking at the part name of the camera micro processor or the data of page: 6, address: 11.

Version	Part Name	Page: 6 Address: 11
Ver.6	CXP80624-443Q	06

4. 28 MHz Original Oscillation Adjustment (VC-135 board)

Subject	Not required
Measurement Point	Pin ⑰ of IC703
Measuring Instrument	Frequency counter
Adjusting Element	CT801
Specified Value	14187500 ± 71 Hz

Adjusting method:

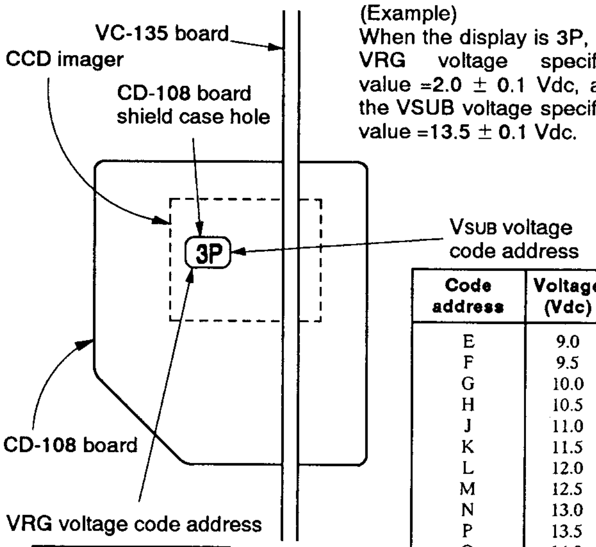
1) Use CT801 to adjust the oscillation frequency to 14187500 ± 71 Hz.

5. V SUB Adjustment (VC-135 board)

Subject	Not required
Measurement Point	Pin ⑬ of CN701 (V SUB CHK)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	04 (V SUB)
Specified Value	(Imager display voltage) ± 0.1 Vdc

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 04, and adjust the voltage of pin ⑬ of CN701 to (imager display voltage) ± 0.1 Vdc.
3) Press the PAUSE button of the adjusting remote control unit.



(Example)
When the display is 3P, the VRG voltage specified value =2.0 ± 0.1 Vdc, and the VSUB voltage specified value =13.5 ± 0.1 Vdc.

VRG voltage code address

Code address	Voltage (Vdc)
1	1.0
2	1.5
3	2.0
4	2.5
5	3.0
6	3.5
7	4.0

Vsub voltage code address

Code address	Voltage (Vdc)
E	9.0
F	9.5
G	10.0
H	10.5
J	11.0
K	11.5
L	12.0
M	12.5
N	13.0
P	13.5
Q	14.0
R	14.5
S	15.0
T	15.5
U	16.0
V	16.5
W	17.0
X	17.5
Y	18.0
Z	18.5

Fig. 8-7.

6. VRG Adjustment (VC-135 board)

Subject	Not required
Measurement Point	Pin ⑮ of CN701 (PG CONT)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	05 (VRG)
Specified Value	(Imager display voltage) ± 0.1 Vdc

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 05, and adjust the voltage of pin ⑮ of CN701 to (imager display voltage) ± 0.1 Vdc.
3) Press the PAUSE button of the adjusting remote control unit.

7. CCD Imager Correction Data Write

Subject	Not required
Adjustment Page	F
Adjustment	1D to 2C (CCD-DEFECT)

Perform CCD imager correction data write in the following cases.

1. When the CCD imager has been replaced
2. The ocassion of exchanging a camera micro processor or EEPROM (IC701).
3. When the page F data has been initialized

In the case of 1, as the correction data is not required for the CCD imager for repair, adjust all data of addresses 1D to 2C to "00".

In the case of 2 and 3, write the correction data attached to the shield case of DD-58 board to addresses 1D to 2C.

If the correction data are not attached, adjust all data of addresses 1D to 2C to "00".

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Write the correction data to page: F, addresses: 1D to 2C.
   Note: To perform write to the non-volatile memory, press the PAUSE button of the adjusting remote control unit every time the new data is set.

Processing after completing adjustments

1) If the CCD imager has been replaced, remove the old correction data label attached on DD-58 board.

8. VAP Pre-check

Subject	Color bar chart
Measuring Point	Adjusting remote control unit display Page: B, address: 0B ····PH Page: B, address: 0D ····YH
Measuring Instrument	
Specified Value	PHF ≦ 68 YHF ≦ 68 PHO ≧ 98 YHO ≧ 98

Checking method:

1) Adjust the position of the unit so that the color bar chart comes to the center of the monitor (top, bottom, left, and right).
2) Release the protect.
   Page: 6, address: 00, data: 01
3) Set data: 01 to page: B, address: 05.
   (a1 SENS VAP MODE 4 setting)
4) Set data: FF to page: E, address: 10.
   Set data: 0F to page: E, address: 11.
   (Check that the color bar chart shifts downwards on the monitor TV.)
5) After 1 second, check that the data (PHF) of page: B, address: 0B is within the "00" to "68" range.
6) Set data: 00 to page: E, address: 10.
   Set data: 08 to page: E, address: 11.
   (Check that the color bar chart shifted downwards moves back to the center of the monitor TV.)
   Set data: FF to page: E, address: 12.
   Set data: 0F to page: E, address: 13.
   (Check that the color bar chart shifts to the right.)
7) After 1 second, check that the data (YHF) of page: B, address: 0D is within the "00" to "68" range.
8) Set data: 00 to page: E, address: 12.
   Set data: 00 to page: E, address: 13.
   (Check that the color bar chart shifts to the left via the center.)
9) After 1 second, check that the data (YHO) of page: B, address: 0D is within the "98" to "FF" range.
10) Set data: 08 to page: E, address: 13.
    (Check that the color bar chart moves back to the center.)
    Set data: 00 to page: E, address: 11.
    Set data: 00 to page: E, address: 10.
    (Check that the color bar chart shifts upwards.)
11) After 1 second, check that the data (PHO) of page: B, address: 0B is within the "98" to "FF" range.
12) Set data: 08 to page: E, address: 11.
    (Check that the color bar chart moves back to the center.)
13) Set data: 00 to page: B, address: 05.
    (Release of a1 SENS VAP MODE 4)

9. HALL Adjustment

Subject	Not required
Measurement Point	DDS display of EVF or monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	08 (HALL GAIN) 09 (HALL OFFSET)
Specified Value	31 to 35 during IRIS OPEN B1 to B5 during IRIS CLOSE

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 40 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (HALL output display mode setting)
3) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
4) Set data: 40 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
5) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the monitor TV display), and take it as W_2.
6) Set data: 30 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
7) Read the DDS display data, and take it as W_1.
8) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS OPEN mode setting)
9) Read the DDS display data, and take it as K_1.
10) Set data: 40 to page: F, address: 08, and press the PAUSE button.
11) Read the DDS display data, and take it as K_2.
12) Convert W_1, W_2, K_1, K_2 to decimal notation, and obtain W_1', W_2', K_1', K_2'. (Refer to Table 8-7. "Hexadecimal notation-decimal notation conversion table".)
13) Calculate X_1' using the following equations (decimal notation calculation).
   $A'=W_2'+K_1'-W_1'-K_2'$ ....Equation 1
   $B'=W_1'-K_1'$ ....Equation 2
   $X_1'=\frac{2048+(48\times A')-(16\times B')}{A'}$ ....Equation 3
14) Convert X_1' to hexadecimal notation, and obtain X_1.
   (Round off to one decimal place)
15) Set data: X_1 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
16) Change the data of page: F, address: 09, and adjust the DDS display data to "33".
17) Press the PAUSE button of the adjusting remote control unit.
18) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
19) Read the DDS display data, and take it as W_0. If W_0 lies within the "B1" to "B5" range, perform "Processing after completing adjustments". If it lies outside the range, perform the following adjustments.
20) Convert W_0 to decimal notation, and obtain W_0'.
21) Calculate X_2' using the following equations (decimal notation calculation).
   $C'=W_0'-B'-51$ ....Equation 4
   $X_2'=\frac{(128-B')\times(X_1'-48)+48\times C'}{C'}$ ....Equation 5
   (X_1' and B' are values obtained from equations 2 and3)
22) Convert X_2' to hexadecimal notation and obtain X_2.
   (Round off to one decimal place)
23) Set data X_2 to page: F, address: 08, and press the PAUSE button of the adjusting remote control unit.
24) Change the data of page: F, address: 09, and adjust the DDS display data to "B3".
25) Press the PAUSE button of the adjusting remote control unit.
26) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS OPEN mode setting)
27) Check that the DDS display data lies within the "31" to "35" range.

Processing after Completing Adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS NORMAL mode setting)

10. Flange Back Adjustment

Subject	Chart for flange back adjustment (1000 ± 5 mm from the front side of the lens Luminance: 350 ± 50 lux)
Measurement Point	Check the operations on the TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	86 (WIDE LIMIT), 87 (WIDE LIMIT H), 88 (TELE LIMIT), 89 (TELE LIMIT H), 8A (STEP ZERO), 8B (STEP ZERO SPAN)

Adjusting method:

1) Check that the STEADY SHOT switch is at "Off".
2) Check that the data of address: 86 to address: 8A of page: F are set to the initial values.
3) Check that the flange back adjustment chart center and the exposure display center coincide at both zoom lens TELE end and WIDE end.
4) Release the protect.
   Page: 6, address: 00, data: 01
5) Check that the data of page: 6, address: 09 is 00.
   (Flange back adjustment possible display)
6) Set data: 01 to page: F, address: AC.
   (This causes automatic adjustment to be performed. Adjustments are performed at the zoom lens TELE end first, and then at the WIDE end. The adjustment data is automatically input to page: F, addresses: 86 to 8B.)
7) Check that the data of page: 6, address: 09 is 01.
   (Display indicating flange back adjustment completion)

Processing after completing adjustments

1) Set data: 00 to page: F, address: AC.
2) Turn off the main power supply (6.3V).

11. Flange Back Check

Subject	Siemens star (1m from the front of the lens)
Measurement Point	DDS display of EVF or monitor TV
Measuring Instrument	
Specified Value	$D_2=D_1 \pm 3$

Checking method:

1) Set data: 11 to page: 6, address: 00.
   (Camera adjustment (window ON) mode)
2) Set data: B0 to page: F, address: AF.
   (Focus step display mode)
3) Place the Siemens star 1m from the front of the lens.
4) Set the "Auto-lock" switch to "Off".
5) Set the "Exposure" to "Manual". Rotate the "Exposure" dial to the "+" side, and set the IRIS to "Open".
6) Adjust the luminance intensity or shutter speed for the Siemens star so that the optimum image can be obtained.
7) Expose the siemens star at the zoom TELE end.
8) Set the "Focus" to "Manual". Rotate the focus ring, and adjust the focus.
9) Adjust to the zoom WIDE end.
10) Read the focus step value (4 digits) displayed on the TV monitor, and take it as D_1.
11) Rotate the focus ring, and adjust the focus.
    Read the focus step value, and take it as D_2.
12) Check that $D_2=D_1 \pm 3$.

Processing after Completing Check

1) Set data: 21 to page: F, address: AF.
   Press the PAUSE button of the adjusting remote control unit.

12. SYNC Level Adjustment (VC-135 board)

Subject	Not required
Measurement Point	Pin ⑱ of CN701 (CAM Y)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	06 (VREF-Y)
Specified Value	A=150 ± 5 mV

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
3) Change the data of page: F, address: 06, and adjust so that the SYNC level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of IRIS CLOSE mode)

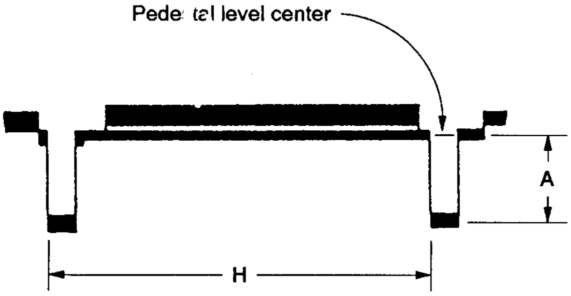


Fig. 8-8.

13. BURST Level Adjustment (VC-135 board)

Subject	Not required
Measurement Point	Pin ⑭ of CN701 (CAM C)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	07 (VREF-C)
Specified Value	A=150 ± 5 mVp-p

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE mode setting)
3) Change the data of page: F, address: 07, and adjust so that the burst level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of IRIS CLOSE mode)

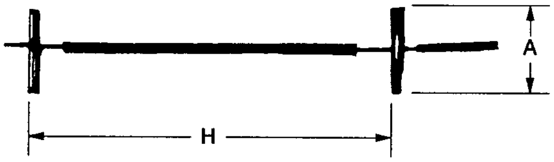


Fig. 8-9.

14. A/D Offset Adjustment

Subject	Not required
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope and DDS display on the EVF or the TV monitor
Adjustment Page	F
Adjustment Address	0C (AD REF)
Specified Value	42 to 43

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Set data: 05 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE AGC MIN mode setting)
3) Set data: 00 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (Y sampling output mode setting)
4) Set data: 35 to page: 1, address: E6.
   (Setting 1 of the sampling position)
5) Set data: 6D to page: 1, address: E7.
   (Setting 2 of the sampling position)
6) Gradually increase the data of page: F, address: 0C from "00" until the black luminance point of the vectorscope begins to enlarge. At this time, check that the DDS display data is "42" and sometimes "43".

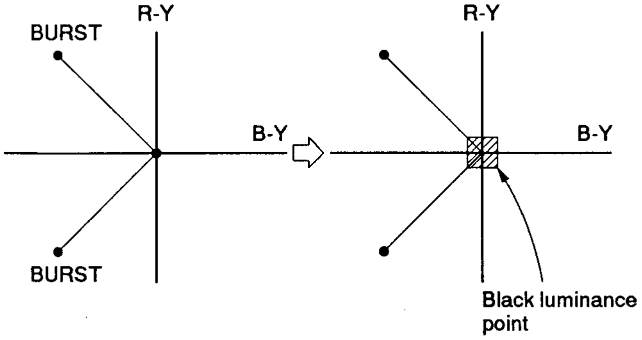


Fig. 8-10.

7) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 21 to page: F, address: AF and press the PAUSE button of the adjusting remote control unit.
   (Release of Y sampling output mode)
2) Set data: 00 to page: 1, address: E6.
   Set data: 00 to page: 1, address: E7.
   (Release of sampling position setting)
3) Set data: 00 to page: 6, address: 01.
   Press the PAUSE button of the adjusting remote control unit. (Release of IRIS CLOSE mode)

15. Carrier Balance Adjustment

Subject	Not required
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	03 (CS SL)
Specified Value	The center of the black luminance point should lie within the 1 ϕ circle whose center is the principle point.

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01.
2) Set data: 07 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS CLOSE, AGC MAX mode setting)
3) Change the data of page: F, address: 03, and adjust so that the center of the black luminance point coincides with the principle point.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (IRIS NORMAL mode setting)

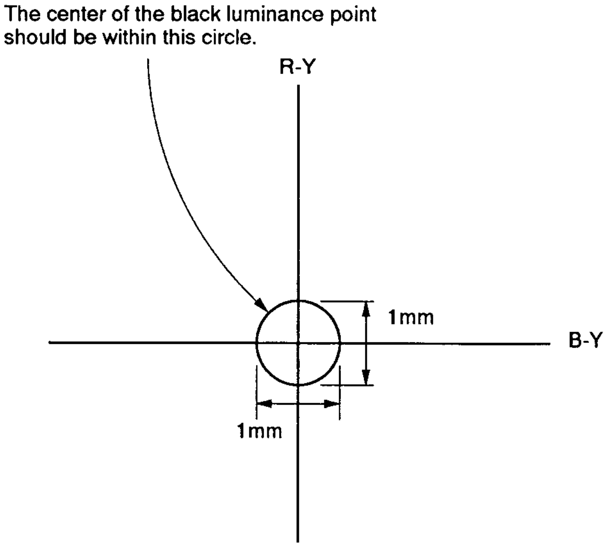

The center of the black luminance point should be within this circle.
R-Y
1mm
B-Y
1mm

Fig. 8-11.

16. Picture Frame Setting

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor.
Specified Value	A=B, C=D, t=0 ± 0.1 msec ●

Setting method:

1) Turn the auto focus off.
2) Adjust the focus using the focus knob.
3) Adjust the zoom and the camera direction, and set to the specified position.
4) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "color bar chart standard picture frame" and "white pattern standard picture frame".

Check on the oscilloscope

1. H period

2. V period

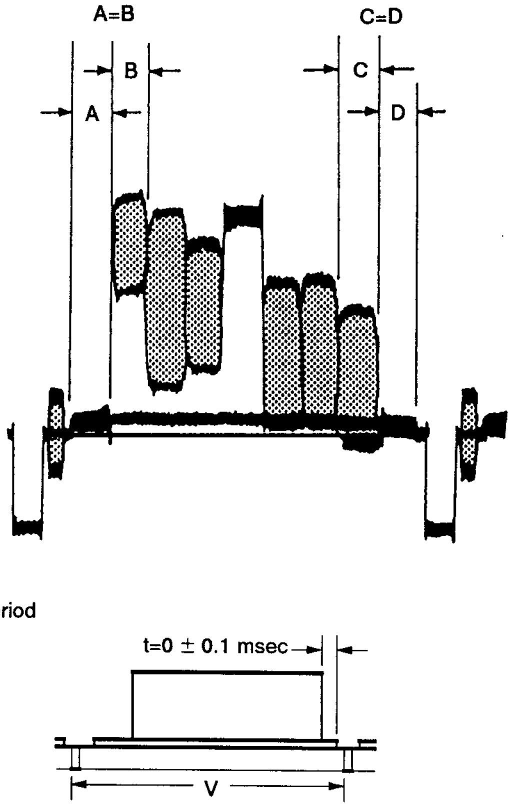

A=B
C=D
B
A
C
D
t=0 ± 0.1 msec
V

Fig. 8-12.

Check on the TV monitor (under-scan mode)

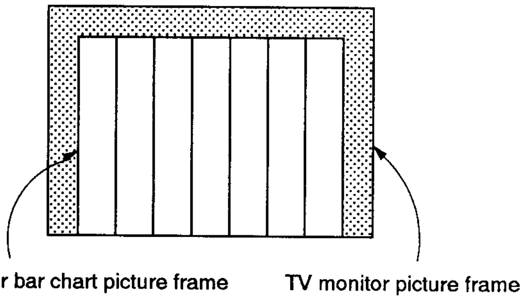

Color bar chart picture frame
TV monitor picture frame

Fig. 8-13.

17. IRIS Level Adjustment (VC-135 board)

Subject	Color bar standard picture frame
Measurement Point	Pin ⑪ of CN701 (IRIS OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	63 (AGC MIN)
Specified Value	A=200 ± 5 mV

Adjusting method:

1) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 63, and adjust so that the IRIS OUT signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

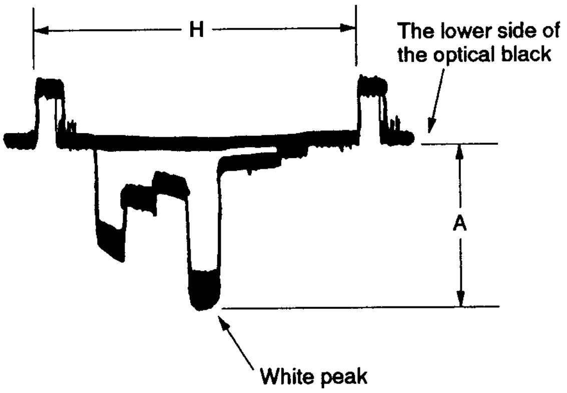


Fig. 8-14.

18. MAX GAIN Adjustment (VC-135 board)

Subject	Color bar standard picture frame
Filter	ND filter 1.0 (2 sheets) and 0.4 (1 sheet), 0.1 (1 sheet)
Measurement Point	Pin ⑱ of CN701 (CAM Y)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	64 (AE MIN L)
Specified Value	A=165 ± 5 mV

Adjusting method:

1) Place the ND filter 2.5 (1.0+1.0+0.4+0.1) on the lens.
2) Release the protect.
   Page: 6, address: 00, data: 01
2) Change the data of page: F, address: 64, and adjust so that the CAM Y signal level (A) becomes the specified value.
   Note: If the CAM Y signal level does not satisfy the specified value even if the data of Address: 64 is set to "00", set the data to "00".
4) Press the PAUSE button of the adjusting remote control unit.

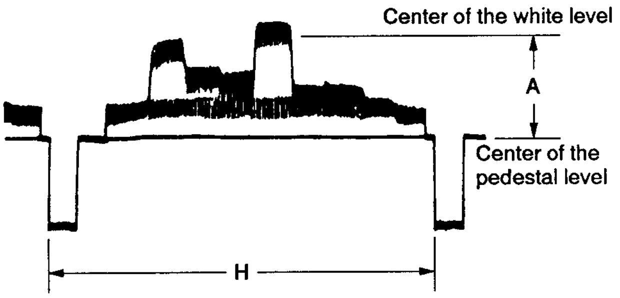


Fig. 8-15.

19. IRIS IN/OUT Adjustment

Subject	White pattern standard picture frame
Measurement Point	DDS display of the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	39 (AWB IRIS IN) 3A (AWB IRIS OUT)

Adjusting method:

1) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode (window ON) setting)
2) Set data: 40 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (HALL data display)
3) Set data: 0B to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (ND0.8 shutter mode setting)
4) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the TV monitor), and take it as D39.
5) Set data: D39 to page: F, address: 39, and press the PAUSE button of the adjusting remote control unit.
6) Set data: 09 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (ND0.5 shutter mode setting)
7) Read the DDS display data and take it as D3A.
8) Set data: D3A to page: F, address: 3A, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the ND0.5 shutter mode)

20. Pre-white Balance Adjustment

Subject	White pattern standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	33 (R CONT REF), 34 (B CONT REF)
Specified Value	The center of the white luminance point should lie within the circle with a diameter of 1 mm whose center is the principle point

Adjusting method:

1) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (WB 3200K preset mode setting)
2) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode (window ON) setting)
3) Change the data of addresses:33 and 34 of page: F alternately, and coincide the white luminance point to the principle point.
   Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses.
   If not, the new data will not written to the memory.
4) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the preset mode)
2) Set data: 10 to page: 6, address: 00.
   (Protect mode setting)

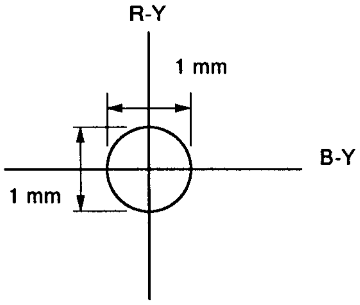


Fig. 8-16.

21. Color Reproduction Adjustment

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	18 (CORE B–Y GAIN), 19 (CORE R–Y GAIN), 1A (CORE R–Y HUE), 1B (CORE B–Y HUE)
Specified Value	All color luminance points should settle within each color reproduction frame.

Adjusting method:

1) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Indoor white balance mode setting)
2) Set data: 01 to page: 6, address: 00.
(Camera adjustment mode (window OFF) setting).
3) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
4) Change the data of addresses 18 to 1B of page: F, and settle each color luminance point in each color reproduction frame.
Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the addresses.
If not, the new data will not be written to the memory.
5) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
(Release of the adjustment mode)
2) Set data: 10 to page: 6, address: 00.
(Protect mode setting)

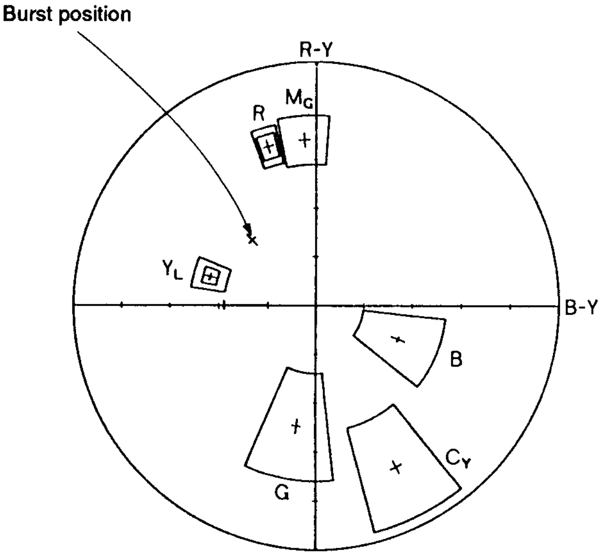


Fig. 8-17.

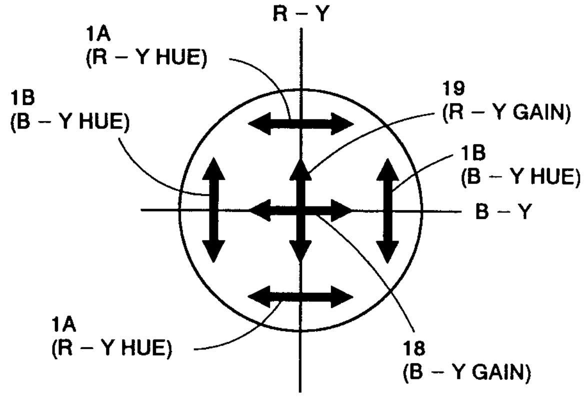


Fig. 8-18. Direction of the Movements of the Adjustment Address and Luminance Point

22. Auto White Balance Preset Adjustment

Subject	White pattern standard picture frame
Adjustment Page	F
Adjustment Address	2D (R REF L), 2E (R REF H), 2F (G REF L), 30 (G REF H), 31 (B REF L), 32 (B REF H)

Adjusting method:

1) Turn the power of the unit OFF/ON.
2) Check that the data of page: 6, address: 09 is 00.
   (Auto white balance preset adjustment possible display)
3) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode (window ON) setting)
5) Set data: 11 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (3200K preset data take in preparation mode)
6) Set data: 0D to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (When the 3200K preset data is taken in, the data will be automatically input to addresses 2D to 32 of page F.)
7) Check that the data of page: 6, address: 09 is 01.
   (Auto white balance preset adjustment completion display)
8) Perform "Auto White Balance Adjustment".

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Release of the auto white balance preset mode)
2) Set data: 10 to page: 6, address: 00.
   (Release of camera adjustment mode)

23. Auto White Balance Adjustment

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	Check with the DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	35 (AWB NORM R) 36 (AWB NORM B)
Specified Value	R ratio 2980 ± 40 B ratio 5C80 ± 40

Note: Perform this adjustment after "Auto White Balance Preset Adjustment".

Adjusting method:

1) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode (window ON) setting)
2) Set data: D0 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Auto white balance adjustment mode setting)
3) Set data: 82 to page: F, address: AF.
   (R ratio display mode setting)
4) Change the data of page: F, address: 35, and adjust the average value of the DDS display data (the display data at the bottom right of the EVF or the TV monitor) to 2980 ± 40.
5) Press the PAUSE button of the adjusting remote control unit.
6) Set data: 83 to page: F, address: AF.
   (B ratio display mode setting)
7) Change the data of page: F, address: 36, and adjust the average value of the DDS display data to 5C80 ± 40.
8) Press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Release of the white balance adjustment mode)
2) Set data: 21 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (Release of the B ratio display mode)
3) Set data: 10 to page: 6, address: 00.
   (Release of camera adjustment mode)

24. White Balance Check

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.3
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 8-19. A to C

Checking method:

1) Check that the lens is not covered with either filter.
2) Set data: 11 to page: 6, address: 00.
   (Camera adjustment mode (window ON) setting)
3) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Indoor white balance mode setting)
4) Check that the center of the white luminance point is within the circle shown in Fig. 8-19.A.
   (Indoor white balance check)
5) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Auto white balance mode setting)
6) Set data: 01 to page: F, address: 5C, and press the PAUSE button of the adjusting remote control unit.
   (Auto white balance high speed tracking mode setting)
7) Set data: 91 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (R, B ratio (M) display mode setting)
8) Check that the top 2 digits and the bottom 2 digits of the DDS display are 3D to 43, or check that the center of the white luminance point is within the circle shown in Fig. 8-19. A.
9) Place the C14 filter on the lens.
10) Check that the center of the white luminance point settles in the circle shown in Fig. 8-19. B.
    (Auto white balance outdoor mode check)
11) Remove the C14 filter, and place the ND filter 1.3 (1.0+0.3) on the lens.
12) Check that the center of the white luminance point settles in the circle shown in Fig. 8-19. C.
    (Auto white balance indoor mode check)

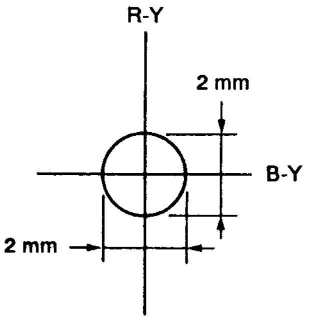


Fig. 8-19. A

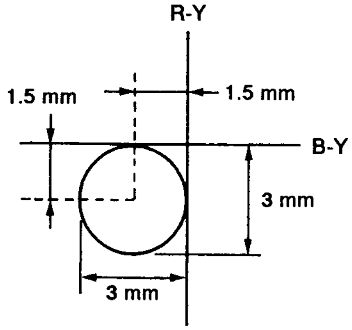


Fig. 8-19. B

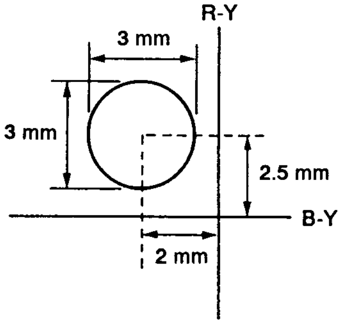


Fig. 8-19. C

Processing after completing adjustments

1) Set data: 0C to page: F, address: 5C, and press the PAUSE button of the adjusting remote control unit.
   (Release of the auto white balance fast tracking mode)
2) Set data: 21 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (Release of the R, B ratio (M) display mode setting)
3) Set data: 10 to page: 6, address: 00.
   (Release of camera adjustment mode)

25. Linear Matrix Adjustment

Subject	Color bar standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3D (DMAT HUE) 3E (DMAT GAIN)

Note 1: Check that position of the color bar chart picture frame that was set in "16. Picture Frame Setting" is maintained, before beginning adjustments.

Adjusting method:

1) Remove the filter C14 for color temperature correction.
2) Release the protect.
   Page: 6, address: 00, data: 01
3) Color bar data sampling mode setting
   1. Check that the data of page: 6, address: 01 is 00.
   2. Set data: F1 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   3. Set data: 3A to page: F, address: 14, and press the PAUSE button of the adjusting remote control unit.

   (Check that the colors on the monitor display at the color modulation stop mode setting have disappeared)
4) Specifying the Yellow position
   1. Set data: C9 to page: 1, address: E6.
   2. Set data: B6 to page: 1, address: E7.
5) Set data: 02 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (R–Y data display mode setting)
6) Read the average value of the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or TV monitor, Note 2), and take it as Y_1.
7) Specifying the Red position
   1. Set data: 59 to page: 1, address: E6.
   2. Set data: 6D to page: 1, address: E7.
8) Read the average value of the DDS display data (Note 2), and take it as R_1.
   Note 2: DDS is displayed only when the adjusting remote control unit is displaying page F or page E.
9) Place the filter C14 for color temperature correction on the lens. (Ensure that the picture frame of the chart does not shift at this time.)
10) Specifying the yellow position.
    1. Set data: C9 to page: 1, address: E6.
    2. Set data: B6 to page: 1, address: E7.
11) Read the average value of the DDS display data (Note 2), and take it as Y_2.
12) Convert Y_1, R_1, Y_2 to decimal notation to obtain Y_1', R_1' and Y_2'.
    (Refer to Table 8-7. "Hexadecimal notation-decimal notation conversion table")
13) Calculate X_1' from the following equation (decimal notation calculation).
    $X_1'=Y_2'-Y_1'$
14) Calculate D3D from the following table.
    (D3D is hexadecimal notation)

X_1' value	D3D
$-1 \leqq X_1' \leqq 1$	F0
$X_1'>1$	F1
$X_1'<-1$	FF

15) Set data: D3D to page: F, address: 3D, and press the PAUSE button of the adjusting remote control unit.
16) Specifying the Red position
    1. Set data: 59 to page: 1, address: E6.
    2. Set data: 6D to page: 1, address: E7.
17) Read the average value of the DDS display data (Note 2), and take it as R_2.
18) Convert R_2 to decimal notation to obtain R_2'.
19) Calculate X_2' from the following equation (decimal notation calculation).
    $X_2'=R_2'-R_1'$
20) Calculate D3E from the following table.

X_2' value	D3E
$X_2' \geqq 0$	00
$0>X_2' \geqq -1$	01
$-1>X_2'$	02

21) Set data: D3E to page: F, address: 3E, and press the PAUSE button of the adjusting remote control unit.

Processing after completing adjustments

1) Set data: 00 to page: F, address: 60, and press the PAUSE button of the adjusting remote control unit.
   (Release of the sampling mode)
2) Set data: 38 to page: F, address: 14, and press the PAUSE button of the adjusting remote control unit.
   (Color modulation ON mode setting)
3) Set data: 21 to page: F, address: AF, and press the PAUSE button of the adjusting remote control unit.
   (Release of the R–Y data display mode)
4) Turn the main power supply (6.3V) off.

Note 3: As the R–Y data and B–Y data are displayed alternatively, it will be difficult to read the R–Y data. Record this data on a tape, and perform frame advancing playback so that only the R–Y data is read.
(Example)
If the frame advancing playback is performed, the following will be displayed.
$\underline{81} \rightarrow 7A \rightarrow \underline{82} \rightarrow 7A \rightarrow \underline{80} \rightarrow 7A \rightarrow \underline{81} \rightarrow 7C \rightarrow \underline{81} \rightarrow 79$
As the R–Y data is above 80, and the B–Y data is below 7F, the data which is underlined is the R–Y data. If the average value is calculated, the R–Y data will become 81.

26. VIDEO OUT Level Check

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal (Terminated at 75 Ω)
Measuring Instrument	Oscilloscope
Specified Value	Y level=640 ± 50 mV SYNC level=300 ± 20 mV BURST level=300 ± 30 mVp-p

Checking method:

1) Check that the Y level, SYNC level and BURST level satisfy the specified values.

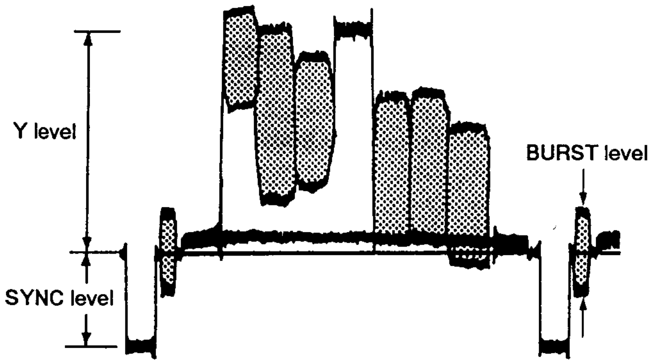


Fig. 8-20.

27. Title Color Reproduction Adjustment

Subject	All black (Cover the lens with a black cap)
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	D
Adjustment Address	14 (BLU R–Y), 15 (BLU B–Y), 16 (GRN R–Y), 17 (GRN B–Y), 18 (CYN R–Y), 19 (CYN B–Y), 1A (RED R–Y), 1B (RED B–Y), 1C (VIO R–Y), 1D (VIO B–Y), 1E (YEL R–Y), 1F (YEL B–Y)
Specified Value	Each title color luminance point should settle within each color reproduction frame.

Note: For details on the page D address list, refer to "Service Mode" in "VIDEO SECTION ADJUSTMENTS".

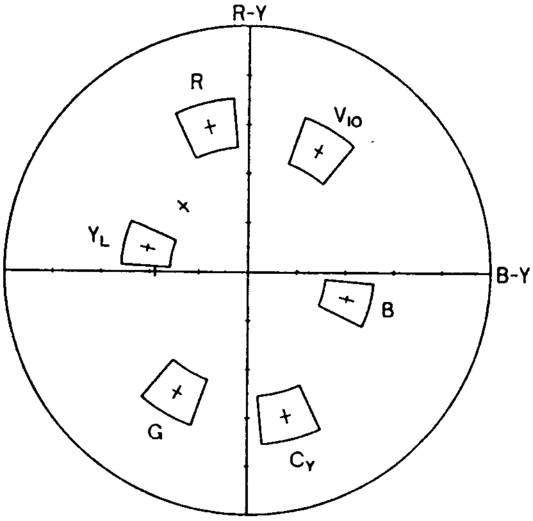


Fig. 8-21.

Adjusting method:

1) Release the protect of page D.
   Page: 1, address: 00, data: 01
2) Press the superimpose button "memory".
3) Adjust the HOLD switch of the adjusting remote control unit to "NORMAL" (left).
4) Use the "color/mode" button to change the title color to "blue".
5) Adjust the HOLD switch of the adjusting remote control unit to "SERVICE" (right).
6) Change the data of addresses 14 and 15 of page D, and and settle the blue luminance points within the blue (B) color reproduction frame.
   Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the address.
   If not, the new data will not be written in the memory.
7) Press the PAUSE button of the adjusting remote control unit.
8) Adjust for green (addresses 16, 17), cyan (addresses 18, 19), red (addresses 1A, 1B), violet (addresses 1C, 1D) and yellow (addresses 1E, 1F) in the same way.
9) Remove the adjusting remote control unit, change the titler color, and check that each title color luminance point is within the color reproduction frame.

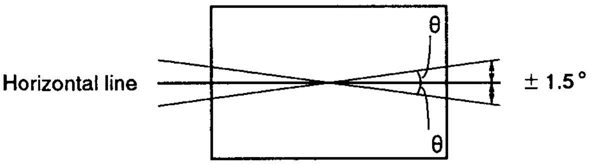
8-3. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS

8-3-1. Horizontal Slant Adjustment

Model	Playback
Signal	Alignment tape: For checking Hi8 mode operations (WR5-8CSE) Monoscope section
Specified Value	Refer to Fig. 8-22.

Adjusting method:

1) Adjust RV504 (BRIGHT) so that the CRT can be seen easily and clearly.
2) Loosen the DY (deflection yoke) tightening nut.
3) Rotate DY, and adjust the image so that it is horizontal.
4) Tighten the DY tightening nut.
(Do not tighten it too tightly.)



Specified value: The image should be within ± 1.5° of the horizontal line.

Fig. 8-22.

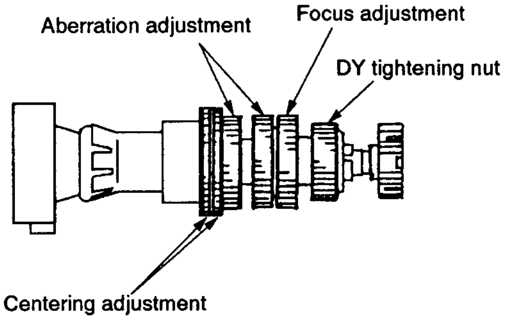


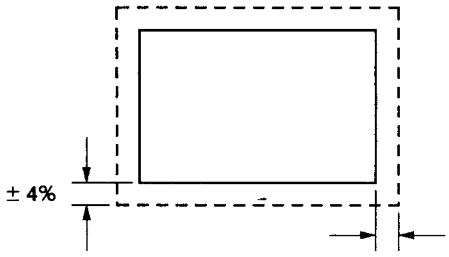
Fig. 8-23.

8-3-2. Centering Adjustment

Model	Playback
Signal	Alignment tape: For checking Hi8 mode operations (WR5-8CSE) Monoscope section
Specified Value	Refer to Fig. 8-24.

Adjusting method:

1) Use the centering adjustment ring and adjust so that the left, right, top, and bottom sides of the display are uniform. (Refer to Fig. 8-23.)
Note: As the centering position changes due to earth magnetism, rotate it 360 ° in the horizontal direction, and adjust with the center section of the modifying position.



Adjustment value: ± 4%

Fig. 8-24.

8-3-3. Focus Adjustment

Model	Playback
Signal	Alignment tape: For checking Hi8 mode operations (WR5-8CSE) Monoscope section

Adjusting method:

1) Adjust the focus ring to obtain the optimum focus.
(Refer to Fig. 8-23.)

8-3-4. Aberration Adjustment

Model	E-E
Signal	Dot pattern
Specified Value	Refer to Fig. 8-25.

Adjusting method:

1) Adjust the aberration adjustment ring so that the tracing of the dot becomes less than twice the diameter of the dot, or the fan aberration becomes less than the diameter of the dot.
2) If the centering becomes displaced here, perform the centering adjustment from the beginning again.

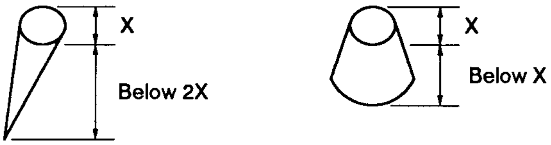


Fig. 8-25.

8-3-5. Horizontal Oscillation Frequency Adjustment (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking Hi8 mode operations (WR5-8CSE)
Measurement Point	Positive pole terminal of C516
Measuring Instrument	Digital voltmeter or oscilloscope (DC range)
Adjustment Element	RV501
Specified Value	2.30 ± 0.05 Vdc

Adjusting method:

1) Adjust to 2.30 ± 0.05 Vdc using RV501.

8-3-6. Horizontal Amplitude Adjustment (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking Hi8 mode operations (WR5-8CSE) Monoscope section
Adjusting Element	C504
Specified Value	6 ± 2%

Adjusting method:

1) Rotate RV502, and adjust the top and bottom sides of the monoscope image to the top and bottom edges of the display.
2) Rotate RV504 so that the brightness is the normal level.
3) Adjust the pattern (A) of the H size adjustment capacitor (C504) to "short" or "open", so that the horizontal direction over scan becomes 6 ± 2% (Left and right totals). (Refer to Fig. 8-27.)

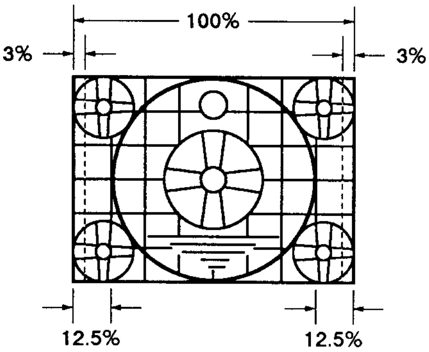
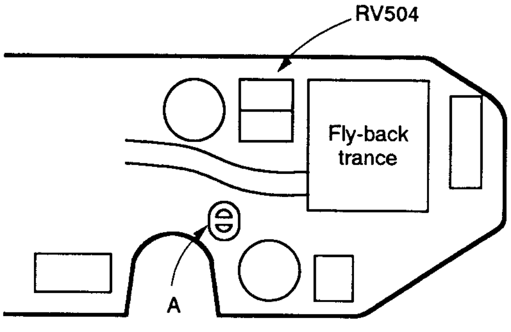


Fig. 8-26.



VF-42 board (component side)

Section A	Size H
Open	Small
Short	Big

Fig. 8-27.

8-3-7. Vertical Amplitude Adjustment (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking Hi8 mode operations (WR5-8CSE) Monoscope section
Adjusting Element	RV502
Specified Value	5 ± 2%

Adjusting method:

1) Adjust RV502 so that the vertical direction over scan becomes 5 ± 2% (Top and bottom totals).

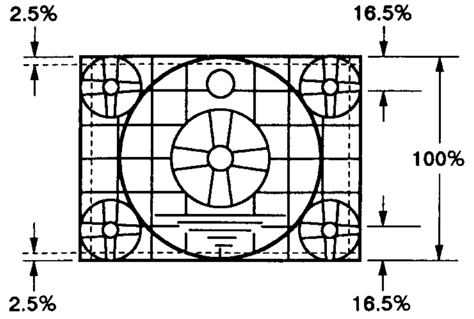


Fig. 8-28.

8-3-8. Brightness, Contrast Adjustments (VF-42 board)

Model	Playback
Signal	Alignment tape: For checking Hi8 mode operations (WR5-8CSE) Monoscope section
Adjusting Element	Brightness: RV504 Contrast: RV503

Adjusting method:

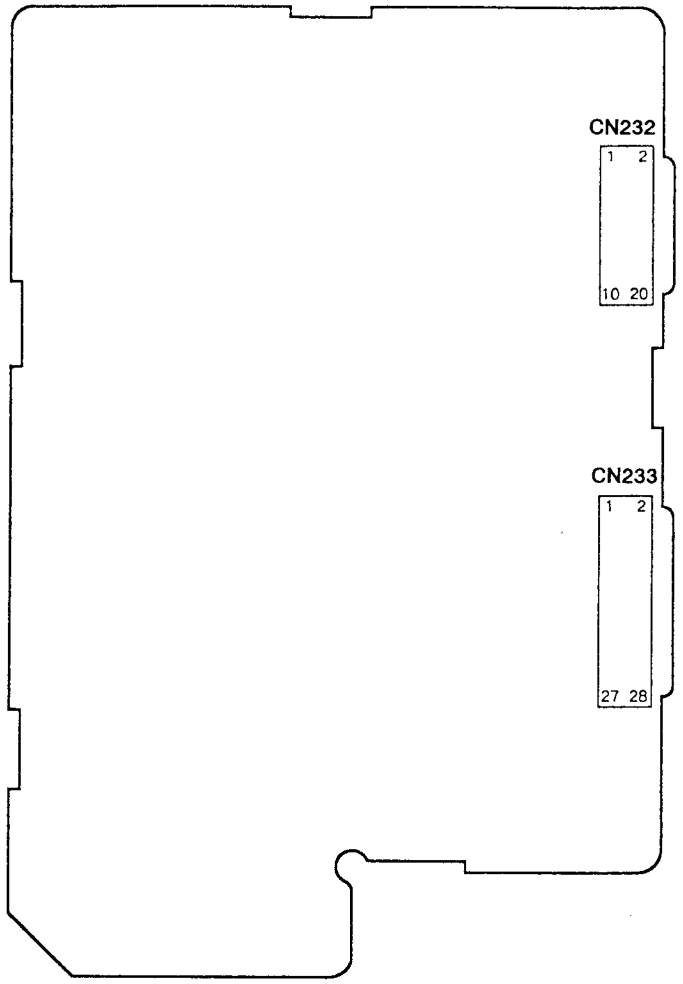
1) Rotate RV504 and RV503 alternately, and adjust so that the bright/dark sections of the gray scale are displayed correctly. (The bright section should not be so bright that the cross hatch in the monoscope circle appears vague. The dark section should not be so dark that the darkest section and the second darkest section of the gray scale cannot be differentiated.)

8-3-9. Horizontal Amplitude, Vertical Amplitude, Focus Check

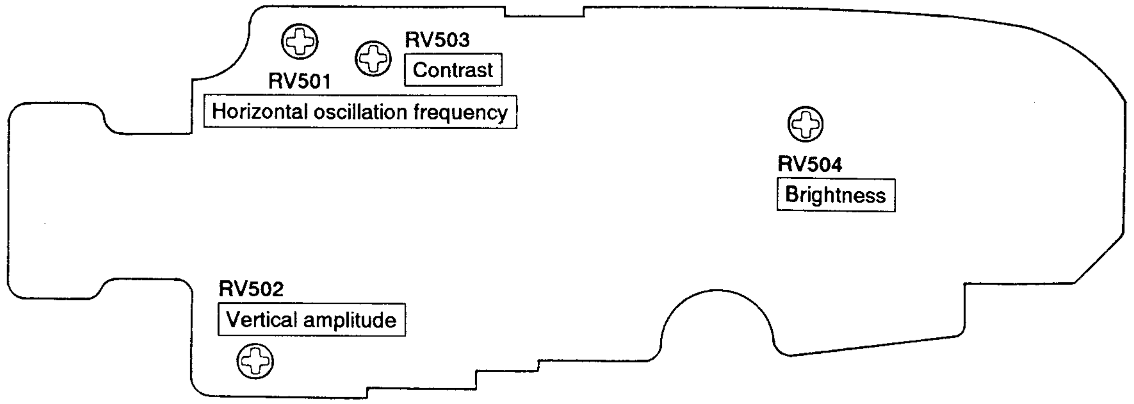
"8-3-6. Horizontal Amplitude Adjustment" and "8-3-7. Vertical Amplitude Adjustment" should both satisfy the specified values. If not, perform the adjustments from the beginning again. In this case, perform "8-3-8. Brightness, Contrast Adjustments" again. Moreover, check the focus, and if it found to be vague, perform "8-3-3. Focus Adjustment" and "8-3-4. Aberration Adjustment".

8-4. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

DD-58 BOARD (COMPONENT SIDE)

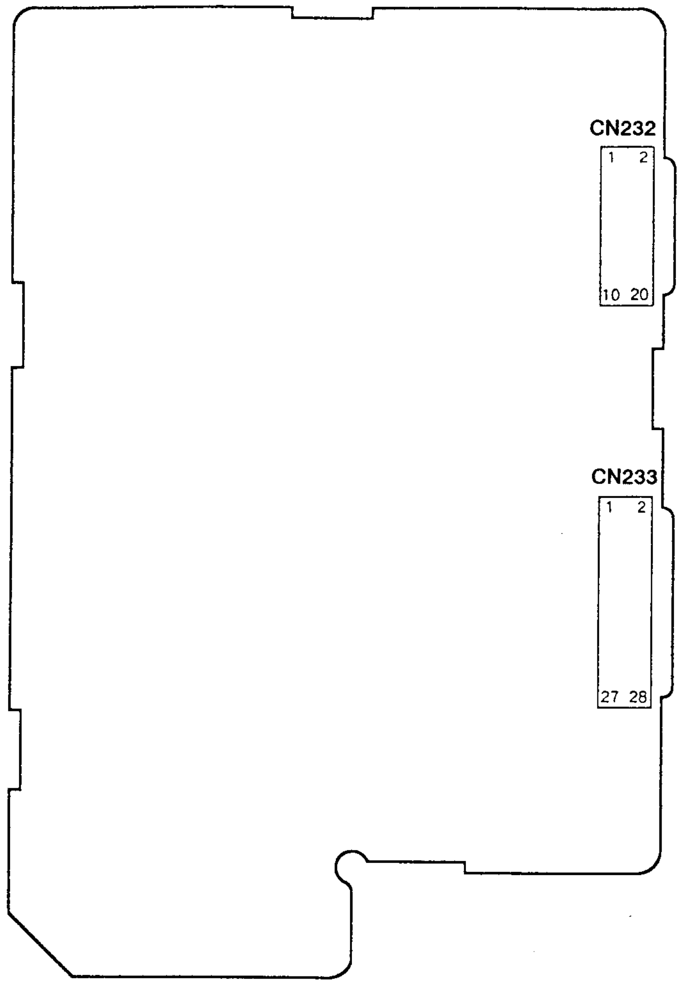


VF-42 BOARD (COMPONENT SIDE)

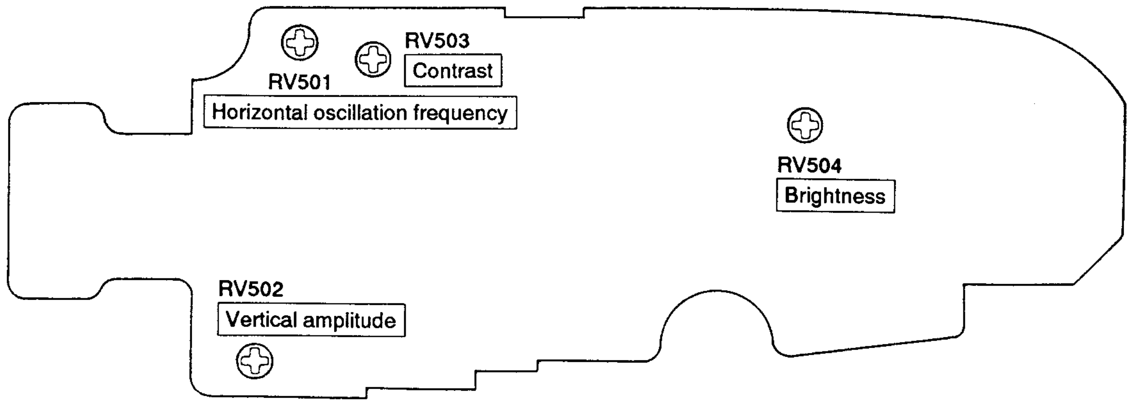


8-4. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

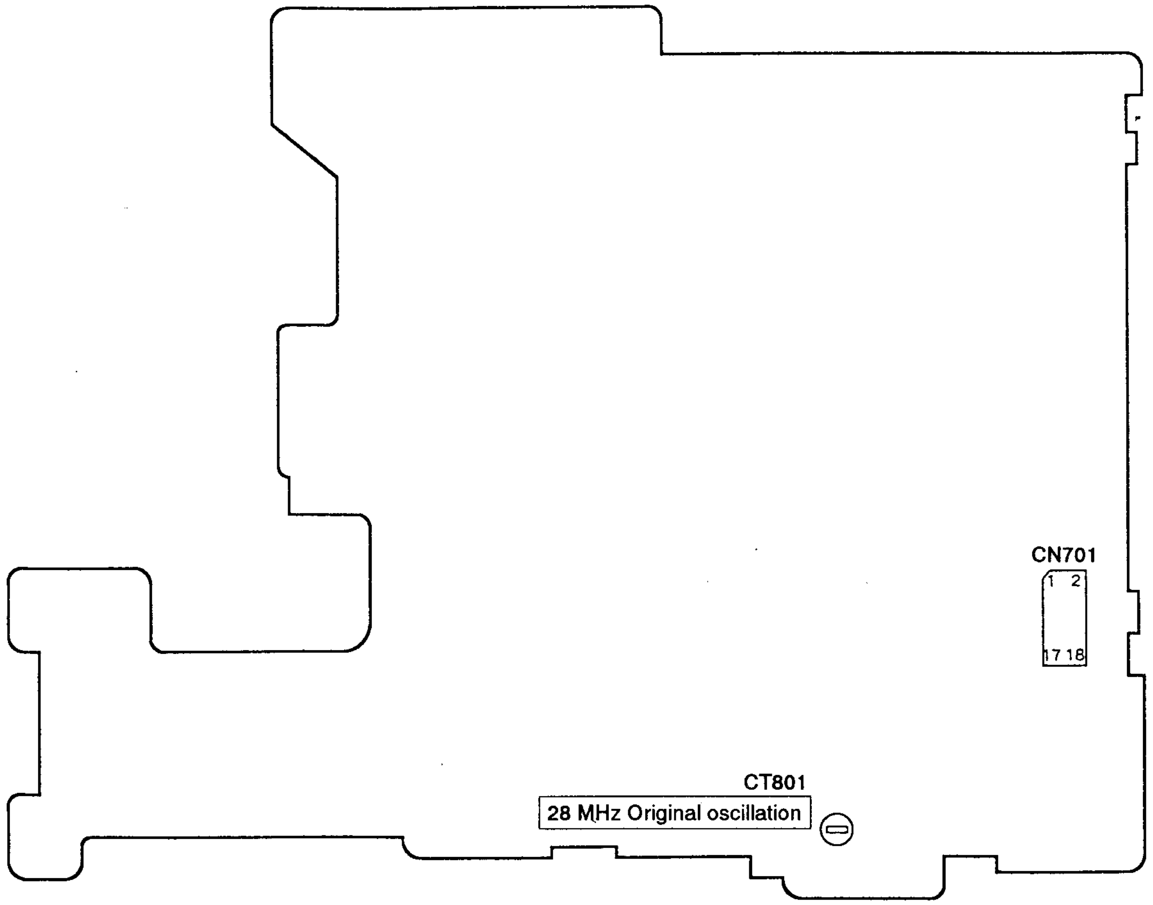
DD-58 BOARD (COMPONENT SIDE)


CN232
1 2
10 20
CN233
1 2
27 28

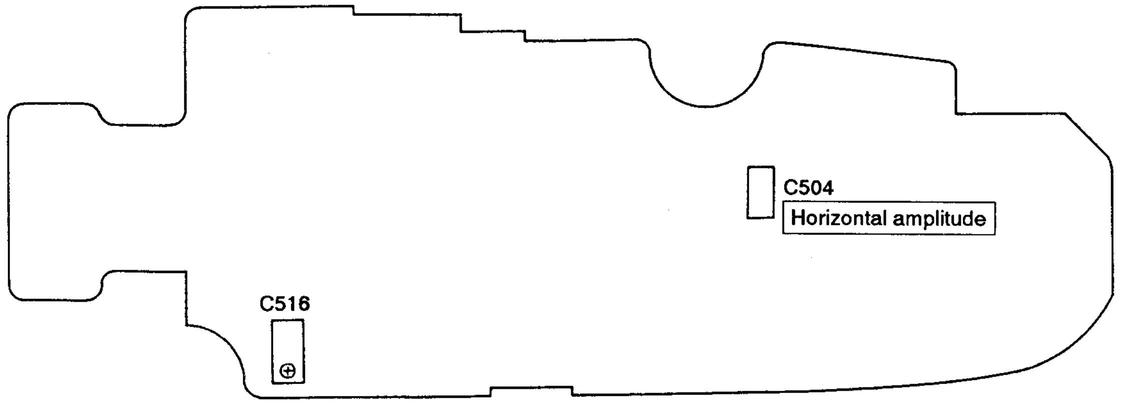
VF-42 BOARD (COMPONENT SIDE)


RV503
Contrast
RV501
Horizontal oscillation frequency
RV504
Brightness
RV502
Vertical amplitude

VC-135 BOARD (COMPONENT SIDE)


CN701
1 2
17 18
CT801
28 MHz Original oscillation

VF-42 BOARD (CONDUCTOR SIDE)


C504
Horizontal amplitude
C516

Address	Name	Function ( ) indicates the adjusting voltage output terminal.	Adjusting Data	
			Initial Value	Memo Column
58	PB Y (E)	Hi8 PB Y level adjustment (IC304 ⑨)	A0	
59	PB Y (L)	Normal PB Y level adjustment (IC304 ⑨)	A0	
5A	EMPH (EE)	EE emphasis input level adjustment (IC304 ⑫)	92	
5B	EMPH (PB)	PB LINE OUT level adjustment (IC304 ⑫)	9A	
5C	REC L CONT (ME E SP)	Hi8 ME SP REC L CONT adjustment (IC305 ②)	DA	
5D	REC L CONT (MP E SP)	Hi8 MP SP REC L CONT adjustment (IC305 ②)	A5	
5E	REC L CONT (ME L SP)	Normal ME SP REC L CONT adjustment (IC305 ②)	D0	
5F	REC L CONT (MP L SP)	Normal MP SP REC L CONT adjustment (IC305 ②)	B9	
60	REC L CONT (ME E LP)	Hi8 ME LP REC L CONT (IC305 ②)	DA	
61	REC L CONT (MP E LP)	Hi8 MP LP REC L CONT (IC305 ②)	A5	
62	REC L CONT (ME L LP)	Normal ME LP REC L CONT (IC305 ②)	D0	
63	REC L CONT (MP L LP)	Normal MP LP REC L CONT (IC305 ②)	B9	
64	PILOT CONT (ME)	ME PILOT CONT (IC305 ④)	90	90
65	PILOT CONT (MP)	MP PILOT CONT (IC305 ④)	80	80
66	YD ADJ	YD adjustment (IC304 ②)	84	
67	PAL JOG	PAL JOG adjustment (IC304 ③)	6D	6D
68	D. CLIP (ME E SP)	Hi8 ME SP DARK CLIP (IC304 ⑦)	1D	1D
69	D. CLIP (MP E SP)	Hi8 MP SP DARK CLIP (IC304 ⑦)	12	12
6A	D. CLIP (ME L SP)	Normal ME SP DARK CLIP (IC304 ⑦)	1C	1C
6B	D. CLIP (MP L SP)	Normal MP SP DARK CLIP (IC304 ⑦)	24	24
6C	D. CLIP (ME E LP)	Hi8 ME LP DARK CLIP (IC304 ⑦)	30	30
6D	D. CLIP (MP E LP)	Hi8 MP LP DARK CLIP (IC304 ⑦)	40	40
6E	D. CLIP (ME L LP)	Normal ME LP DARK CLIP (IC304 ⑦)	1F	1F
6F	D. CLIP (MP L LP)	Normal MP LP DARK CLIP (IC304 ⑦)	75	75
70	W. CLIP (ME E SP)	Hi8 ME SP WHITE CLIP (IC304 ⑧)	40	40
71	W. CLIP (MP E SP)	Hi8 MP SP WHITE CLIP (IC304 ⑧)	41	41
72	W. CLIP (ME L SP)	Normal ME SP WHITE CLIP (IC304 ⑧)	72	72
73	W. CLIP (MP L SP)	Normal MP SP WHITE CLIP (IC304 ⑧)	76	76
74	W. CLIP (ME E LP)	Hi8 ME LP WHITE CLIP (IC304 ⑧)	2E	2E
75	W. CLIP (MP E LP)	Hi8 MP LP WHITE CLIP (IC304 ⑧)	2A	2A
76	W. CLIP (ME L LP)	Normal ME LP WHITE CLIP (IC304 ⑧)	72	72
77	W. CLIP (MP L LP)	Normal MP LP WHITE CLIP (IC304 ⑧)	76	76
78	REC/PB MX (REC)	REC matrix adjustment (IC306 ⑬)	AF	
79	REC/PB MX (PB)	Not used. (IC306 ⑬)	AF	
7A	1.5 IR	Not used. (IC306 ⑧)	AF	
7B	1.5 DEV	1.5 MHz deviation adjustment (IC306 ⑨)	AF	
7C	1.7 IR	Not used. (IC306 ⑥)	AF	
7D	1.7 DEV	1.7 MHz deviation adjustment (IC306 ⑦)	AF	
7E	AUDIO FADER	Audio fader (IC304 ⑬)	00	00
7F	INDEX VCO	PB VCO oscillation frequency adjustment (IC306 ⑫)	A8	

Table 10-4 (3).

Address	Name	Function ( ) indicates the adjusting voltage output terminal.		Adjusting Data	
				Initial Value	Memo Column
80	ZOOM CONT B	Zoom microphone control B (IC305 ⑱)		00	00
81	ZOOM CONT A	Zoom microphone control A (IC305 ⑲)		00	00
82 to 8F		Not used.		FF	FF
90	ZOOM CONT A (ZOOM POS 0)	Zoom microphone control A (IC305 ⑲)	WIDE	6B	6B
91	ZOOM CONT B (ZOOM POS 0)	Zoom microphone control B (IC305 ⑱)		00	00
92	ZOOM CONT A (ZOOM POS 1)	Zoom microphone control A (IC305 ⑲)	↑	6B	6B
93	ZOOM CONT B (ZOOM POS 1)	Zoom microphone control B (IC305 ⑱)		04	04
94	ZOOM CONT A (ZOOM POS 2)	Zoom microphone control A (IC305 ⑲)		65	65
95	ZOOM CONT B (ZOOM POS 2)	Zoom microphone control B (IC305 ⑱)		09	09
96	ZOOM CONT A (ZOOM POS 3)	Zoom microphone control A (IC305 ⑲)		60	60
97	ZOOM CONT B (ZOOM POS 3)	Zoom microphone control B (IC305 ⑱)		0B	0B
98	ZOOM CONT A (ZOOM POS 4)	Zoom microphone control A (IC305 ⑲)		5B	5B
99	ZOOM CONT B (ZOOM POS 4)	Zoom microphone control B (IC305 ⑱)		0D	0D
9A	ZOOM CONT A (ZOOM POS 5)	Zoom microphone control A (IC305 ⑲)		56	56
9B	ZOOM CONT B (ZOOM POS 5)	Zoom microphone control B (IC305 ⑱)		16	16
9C	ZOOM CONT A (ZOOM POS 6)	Zoom microphone control A (IC305 ⑲)		50	50
9D	ZOOM CONT B (ZOOM POS 6)	Zoom microphone control B (IC305 ⑱)		21	21
9E	ZOOM CONT A (ZOOM POS 7)	Zoom microphone control A (IC305 ⑲)		4A	4A
9F	ZOOM CONT B (ZOOM POS 7)	Zoom microphone control B (IC305 ⑱)		30	30
A0	ZOOM CONT A (ZOOM POS 8)	Zoom microphone control A (IC305 ⑲)		40	40
A1	ZOOM CONT B (ZOOM POS 8)	Zoom microphone control B (IC305 ⑱)		3C	3C
A2	ZOOM CONT A (ZOOM POS 9)	Zoom microphone control A (IC305 ⑲)		31	31
A3	ZOOM CONT B (ZOOM POS 9)	Zoom microphone control B (IC305 ⑱)		45	45
A4	ZOOM CONT A (ZOOM POS A)	Zoom microphone control A (IC305 ⑲)		25	25
A5	ZOOM CONT B (ZOOM POS A)	Zoom microphone control B (IC305 ⑱)		51	51
A6	ZOOM CONT A (ZOOM POS B)	Zoom microphone control A (IC305 ⑲)		15	15
A7	ZOOM CONT B (ZOOM POS B)	Zoom microphone control B (IC305 ⑱)		56	56
A8	ZOOM CONT A (ZOOM POS C)	Zoom microphone control A (IC305 ⑲)		0D	0D
A9	ZOOM CONT B (ZOOM POS C)	Zoom microphone control B (IC305 ⑱)		60	60
AA	ZOOM CONT A (ZOOM POS D)	Zoom microphone control A (IC305 ⑲)		09	09
AB	ZOOM CONT B (ZOOM POS D)	Zoom microphone control B (IC305 ⑱)		61	61
AC	ZOOM CONT A (ZOOM POS E)	Zoom microphone control A (IC305 ⑲)		04	04
AD	ZOOM CONT B (ZOOM POS E)	Zoom microphone control B (IC305 ⑱)	↓	6B	6B
AE	ZOOM CONT A (ZOOM POS F)	Zoom microphone control A (IC305 ⑲)	TELE	00	00
AF	ZOOM CONT B (ZOOM POS F)	Zoom microphone control B (IC305 ⑱)		6B	6B

Table 10-4 (4).

SECTION 9
MECHANICAL SECTION ADJUSTMENTS

Mechanical Section Adjustments

For details on the adjustments and checks of mechanical section and the mechanical parts, refer to the separate volume- "8 mm Video Mechanical Adjustment II FL mechanism (Q mechanism)".

9-1. OPERATING WITH THE CASSETTE COMPARTMENT HOLDER ASSEMBLY REMOVED (Refer to Fig. 9-1.)

1. Loading

1) Refer to "2. Disassembly", and supply the power with the external section removed (however, leave the cabinet (R) connected so that the adjusting remote control unit can be connected.). (So that the mechanical deck section can be operated.)
2) Connect the adjusting remote control unit, and turn ON the HOLD switch.
3) Select page: 1, address: 00, and set data: 01.
   (Release of the protect)
4) Select page: D, address: 01, and set data: 01.
   (Test mode 1 setting)
5) Press the PAUSE button of adjusting remote control unit.
6) Turn off the HOLD switch of the adjusting remote control unit. (The adjusting remote control unit can be disconnected after this.)
7) The unit will be set into the loading mode when the lock board release arm ① is pressed in the direction of the arrow.
   (To set the unit into the record mode, hold the push switch ② in place with the cohesion tape ③ before performing this operation.)
8) After completing all operations, be sure to perform "5. Processing after completing operations".

2. Setting the unit into the playback condition

1) Perform steps 1) to 7) of "1. Loading".
2) Press the playback button.

3. Setting the unit into the recording condition

1) Perform steps 1) to 7) of "1. Loading".
2) Press the record switch.

Note: Refer to "VIDEO SECTION ADJUSTMENTS" to set the models without the record switch into the record condition.

4. Ejecting

1) Press the EJECT button.

5. Processing after completing operations

1) Connect the adjusting remote control unit, and turn on the HOLD switch.
2) Select page: 1, address: 00, and set data: 01.
3) Select page: D, address: 01, and set data: 00.
4) Press the PAUSE button of the adjusting remote control unit.
5) Remove the power supply from the unit.

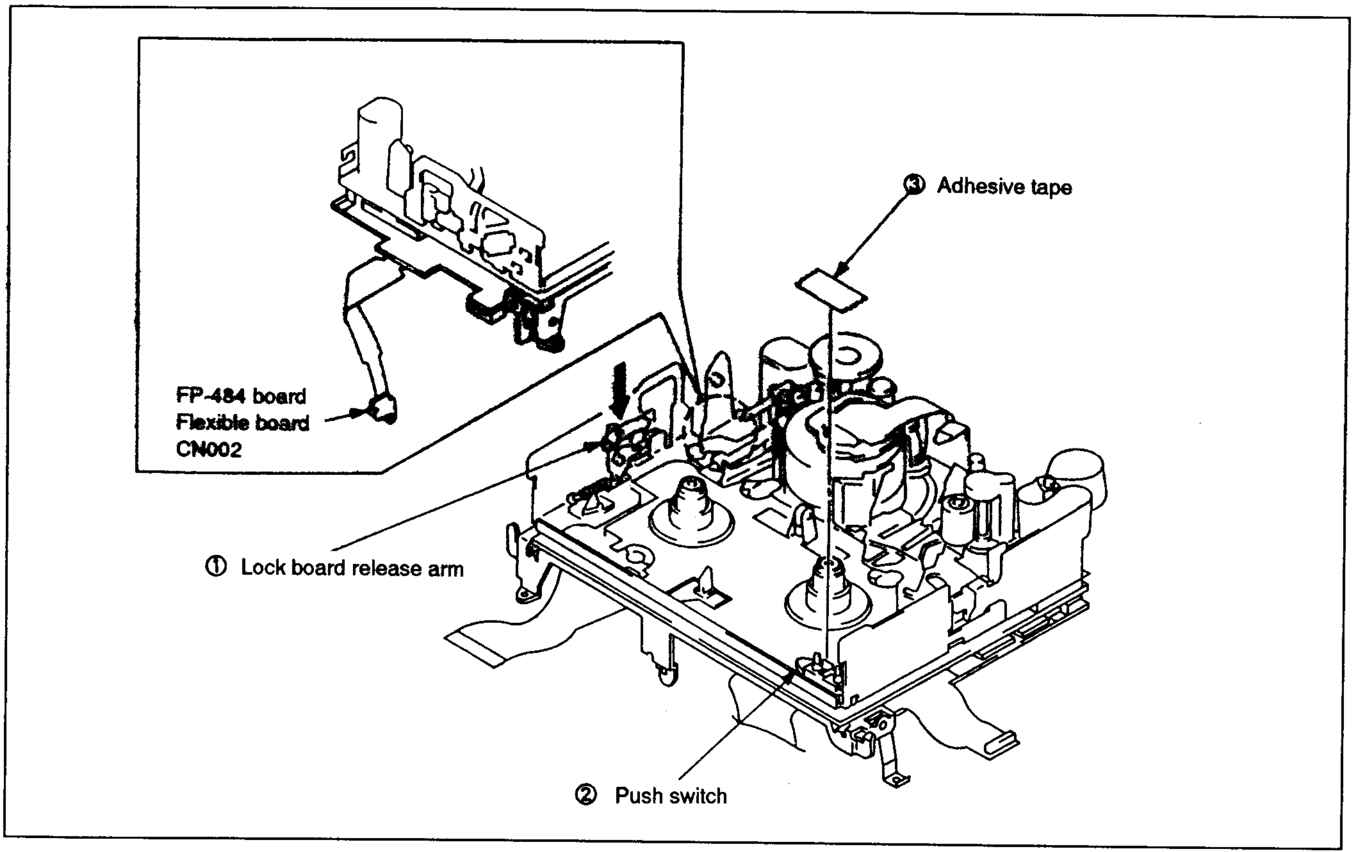

FP-484 board
Flexible board
CN002
③ Adhesive tape
① Lock board release arm
② Push switch

Fig. 9-1.

9-2. TAPE PATH ADJUSTMENT

1. Preparations for adjustment

1) Clean the tape path face (tape guide, drum, capstan shaft, pinch roller).
2) Connect the adjusting remote control unit to the remote terminal (LJ-13 board J511).
3) Turn on the HOLD switch of the adjusting remote control unit.
4) Select page: 1, address: 00, and set data: 01.
   (Release of the protect)
5) Select page: D, address: 01, and set data: 03.
   (Set the track shift mode. The adjusting remote control unit can be disconnected if its PAUSE button is pressed. In this case, be sure to perform "9-1-5. Processing after completing operation" after completing adjustments.)
6) Connect the oscilloscope.
   Channel 1-FP-484 board Pin ⑭ of CN002
   External trigger-FP-484 board Pin ⑨ of CN002
   (Connect the oscilloscope via the measuring pin for the video section (J-6082-140-A).)
7) Playback the alignment tape (WR5-1CP) for tracking.
8) Check that the RF waveform of the oscilloscope is flat at both the entrance and the exit sides.
   If not flat, perform necessary adjustment according to the separate 8 mm Video Mechanical Adjustment II FL mechanism (Q mechanism).
9) Perform "9-1-5. Processing after completing operations", after completing adjustments.

FP-484 board CN002

1	LANC SIG
2	N.C.
3	RF GND
4	CAP FG
5	REC 1B
6	REC 2B
7	REC 1A
8	REC 2A
9	RF SWP
10	$\overline{\text{1/2 RF SWP}}$
11	PB RF CH1
12	PB RF CH2
13	RF GND
14	PB RF OUT

SECTION 10
VIDEO SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 284.

10-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section.

10-1-1. Equipments to be used

1) TV monitor
2) Oscilloscope: 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuater
10) Regulated power supply
11) Alignment tape
    - For tracking adjustment (WR5-1CP)
      Part Code: 8-967-995-07
    - For normal mode video frequency characteristics adjustment (WR5-6C)
      Part Code: 8-967-995-17
    - For Hi8 mode video frequency characteristics adjustment (WR5-7CE)
      Part Code: 8-697-995-18
    - For checking normal mode operations
      For SP (WR5-5CSP)
      Part Code: 8-967-995-47
      Or (WR5-4CSP)
      Part Code: 8-967-995-46
      For LP (WR5-4CL)
      Part Code: 8-967-995-56
      For checking AFM stereo operations (WR5-9CS)
      Part Code: 8-967-995-28
    - For checking Hi8 mode operations (ME tape)
      For SP (WR5-8CSE)
      Part Code: 8-967-995-48
      For LP (WR5-8CLE)
      Part Code: 8-967-995-57
12) Adjusting remote control unit (J-6082-053-A)
13) Measuring pin jig for video section
    Part Code: J-6082-140-A
14) CF-4 board extension cord (48P, 0.8 mm)
    Part code: J-6082-177-A

10-1-2. Precautions Upon Adjustments

The EVF (Electronic viewfinder) section is not required for adjusting the video section.
Remove the following connector if removing the EVF section.

1. CN301 of VS-101 board (Pin 4)

The front panel assembly is not required for adjusting the video section.
Remove the following connectors if removing the front panel assembly.

1. CN902 of MA-174 board (Pin 8)
2. CN903 of MA-174 board (Pin 3)
3. CN401 of RM-58 board (Pin 3)

Cabinet (R) is necessary for connecting the adjusting remote control unit.
Use the CF-4 board extension cord (J-6082-177-A) when adjusting the video circuit and audio circuit.

Cabinet (L) is not required. Remove it.

The audio board (AU-151 board) is only required for "Audio System Adjustment" and the "REC AFM Level Check" of "Video Adjustment". Remove the following connectors.

1. CN603 of AU-151 board (Pin 30)
2. CN602 of AU-151 board (Pin 3)

The lens block (Including the VD-22 and SE-26 boards) is only required for "Power Supply System Adjustment". Remove the following connectors and one mounting screw, and remove it from the VC-135 board.

1. CN002 of VD-22 board
2. CN851 of VC-135 board
3. CN801 of VC-135 board

10-1-3. Connectors for Adjustments (FP-484 board CN002)

Some video section adjustment points are concentrated on the FP-484 board CN002. Connect the measuring instrument via a measuring pin jig (J-6082-140-A).

Pin No.	Signal Name	Pin No.	Signal Name
1	LANC SIG	2	RF GND
3	REC 1B	4	REC 1A
5	RF SWP	6	PB RF CH1
7	RF GND	8	N.C
9	CAP FG	10	REC 2B
11	REC 2A	12	$\overline{1/2}$ RF SWP
13	PB RF CH2	14	PB RF OUT

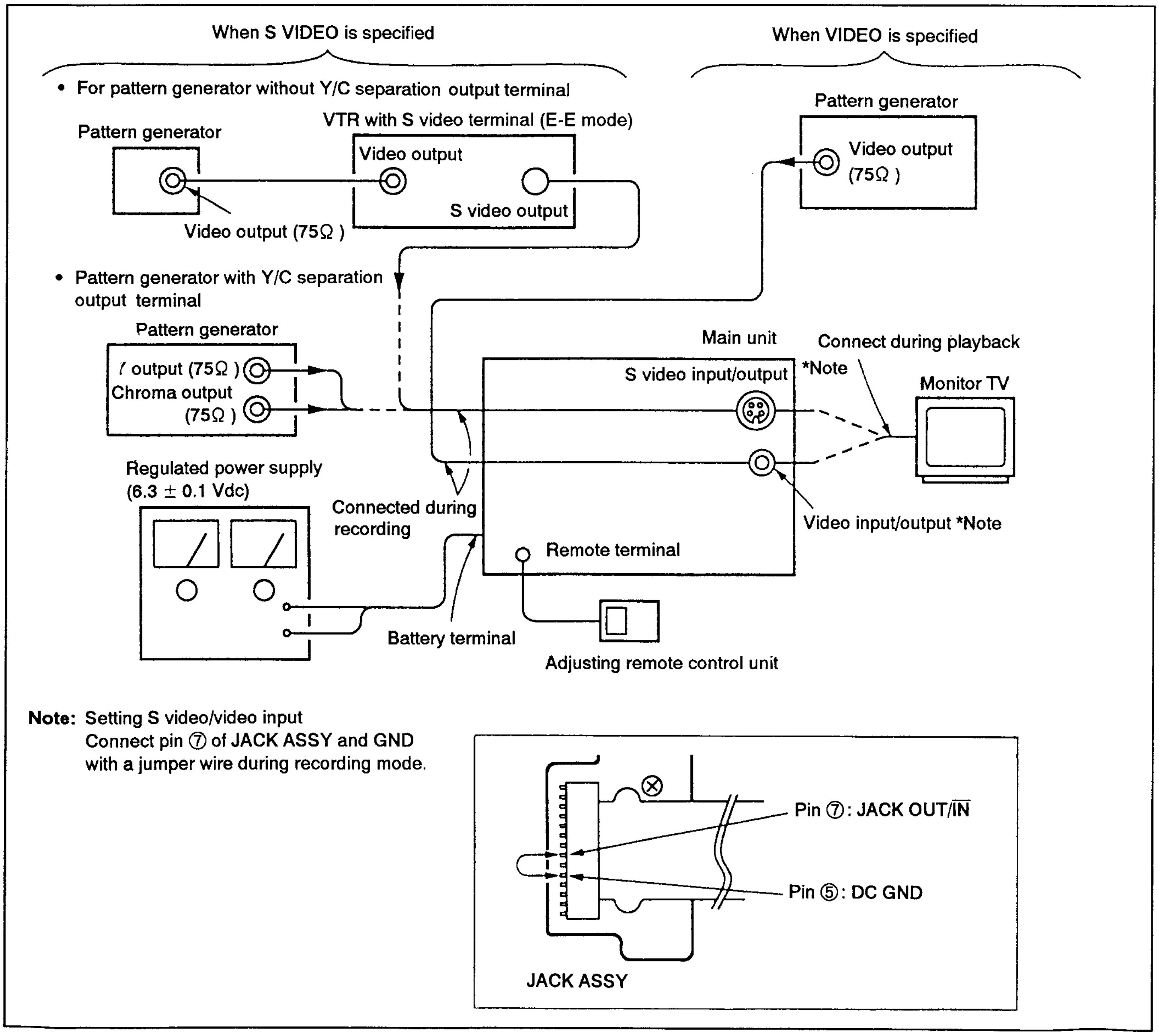
Table 10-1.

10-1-4. Connecting the Equipments

Connect the measuring instruments as shown in Fig. 10-1 according to the input terminal specifications (S VIDEO or VIDEO), adjust the power supply switch (CAMERA/OFF/PLAYER) (FK-4 board S119) to the "PLAYER" position, and perform the adjustments.

The input terminal is specified in the ( ) in the signal column. Either input terminal can be used when there are no specifications. However, the S video input terminal will have the priority. When adjusting with the video input terminal input, disconnect the connector from the S video input terminal.

Note: If the VIDEO input is used for adjustments which specify for the S VIDEO input to be used, the product specifications of the unit may not be satisfied in some cases. Be sure to perform according to the specifications. When adjustments are performed with the S video output terminal VTR as the signal source, the efficiencies of the unit may be affected by the VTR. It is recommended that a pattern generator with a Y/C separation output terminal be used as much as possible.


When S VIDEO is specified
When VIDEO is specified
• For pattern generator without Y/C separation output terminal
Pattern generator
VTR with S video terminal (E-E mode)
Video output
S video output
Video output (75Ω)
Pattern generator
Video output (75Ω)
• Pattern generator with Y/C separation output terminal
Pattern generator
Y output (75Ω)
Chroma output (75Ω)
Main unit
Connect during playback
S video input/output
*Note
Monitor TV
Regulated power supply (6.3 ± 0.1 Vdc)
Connected during recording
Video input/output *Note
Remote terminal
Battery terminal
Adjusting remote control unit
Pin ⑦: JACK OUT/$\overline{\text{IN}}$
Pin ⑤: DC GND
JACK ASSY

Note: Setting S video/video input
Connect pin ⑦ of JACK ASSY and GND with a jumper wire during recording mode.

Fig. 10-1.

10-1-5. How to Set the REC Mode In the Model without REC Switch

1. REC key forbidden accept mode cancel
   1. Connect the adjustment remote controller to the REMOTE terminal.
   2. Turn on the power.
   3. Turn on the HOLD switch of the adjustment remote controller.
   4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
   5. Select the page: D address: 02, and set the data to 83. (REC key forbidden accept mode cancel)
   6. Press PAUSE button on the adjustment remote controller. (Write to the non-volatile memory)

The REC key is accepted through the above procedure. The adjustment remote controller may be removed, hereafter.

2. REC mode setting
   1. Connect Pin ⑤ of CN924 (KEY IN 2) and Pin ④ of CN924 (KEY OUT 0) on VC-135 board with a jumper wire until the VTR is set to REC mode.

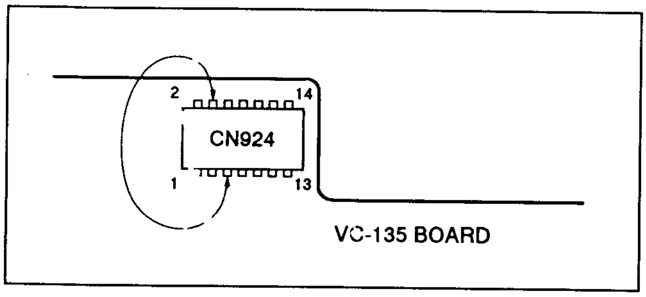

2
14
CN924
1
13
VC-135 BOARD

Fig. 10-2.

3. Procedure after completed the adjustment
   Be sure to return the mode to REC key forbideden accept mode after adjustment.
   1. Connect the adjustment remoter controller to the REMOTE terminal.
   2. Turn on the power.
   3. Turn on the HOLD switch of the adjustment remote controller.
   4. Select the page: 1 address: 00, and set the data to 01. (Protect mode cancel)
   5. Select the page: D address: 02, and set the data to 82. (Setting of the REC key forbidden accept mode)
   6. Press PAUSE button on the adjustment remote controller. (Write to the non-volatile memory)

10-1-6. Checking the Input Signals

As the video signal obtained from the pattern generator is used as the adjusting signal for adjusting the VTR section, this video output signal must be within the given specifications.

1. For S VIDEO Input

Connect the oscilloscope to the Y signal terminal of the S video input/output terminal, and check that the sync signal of the Y signal is approximately 0.3 Vp-p and that the amplitude of the video section is approximately 0.7 Vp-p. (When the VTR with a S video output terminal is used, check that the chroma signal and burst signal have not remained as well.) Connect the oscilloscope to the chroma signal terminal of the S VIDEO IN terminal, and check that the burst signal amplitude of the chroma signal is approximately 0.3 Vp-p and flat, and that the amplitude ratio of the burst signal to the chroma signal is 0.30: 0.66. The Y and chroma signals used in the adjustment are shown in Fig. 10-3.

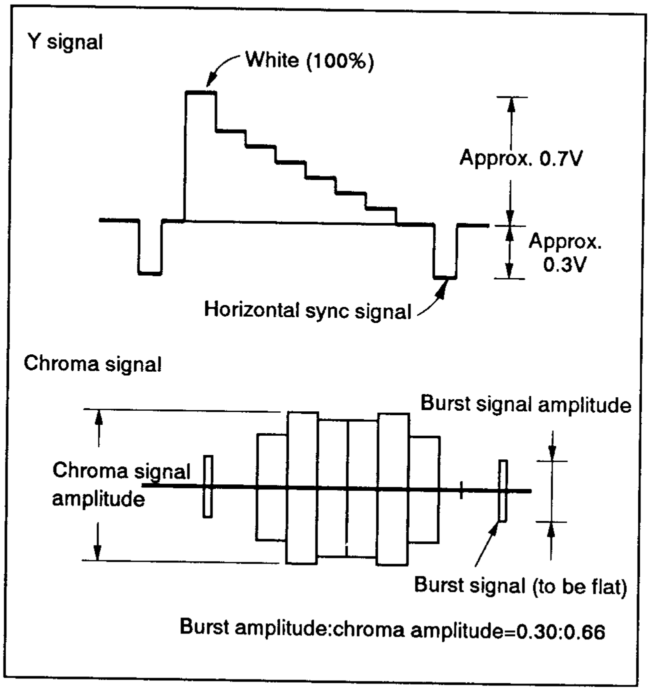

Y signal
White (100%)
Approx. 0.7V
Approx. 0.3V
Horizontal sync signal
Chroma signal
Burst signal amplitude
Chroma signal amplitude
Burst signal (to be flat)
Burst amplitude:chroma amplitude=0.30:0.66

Fig. 10-3. Color bar signal of pattern generator

2. For VIDEO Input

Connect the oscilloscope to the video input/output terminal, and check that the amplitude of the sync signal of the video signal is approximately 0.3V, the amplitude of the video section is approximately 0.7V, the amplitude of the burst signal is approximately 0.3V and flat, and that the level ratio of the burst signal and the [red] signal is 0.30: 0.66.

The video signal (color bar) used for electric adjustments of the VTR section is shown in Fig. 10-4.

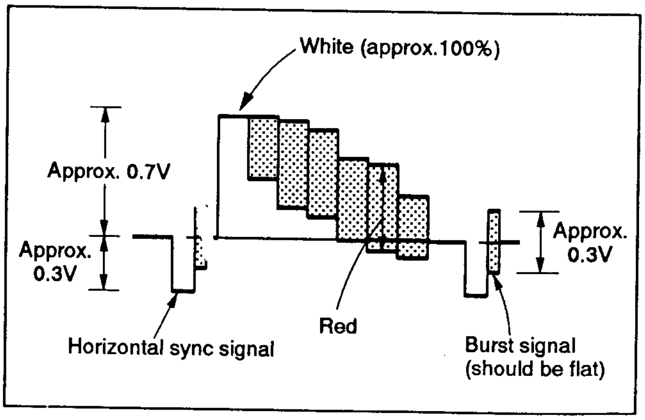

White (approx.100%)
Approx. 0.7V
Approx. 0.3V
Approx. 0.3V
Horizontal sync signal
Red
Burst signal (should be flat)

Fig. 10-4. Color bar signal of pattern generator

10-1-7. Alignment Tape

The following table lists alignment tapes which are available. Use the tape specified in the signal column for each adjustment.

If the type of tape to be used for checking operations is not specified, use whichever type.

Name	Record-ing mode	Tape type	Tape speed	Recording contents		Usage
				Video area	PCM area	
Tracking WR5-1CP	L	MP	SP	CH2: Signal for 1 MHz tape path adjustment		Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-7CE	E	ME	LP	RF sweep 0 to 15 MHz Marker 2, 4.5, 7, 8.5, 10 MHz		Frequency characteristics adjustment
Video frequency characteristics WR5-2C	L	MP	LP	RF sweep Marker 1, 3.58, 5.5, 7 MHz		
Operation check (SP mode) WR5-5CSP	L	MP	SP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation	• Audio signal (PCM) Monoscope section 20 Hz 20 sec. 400 Hz 20 sec. 14 kHz 20 sec. Repeated 4 times Color bar section 1 kHz 4 minutes	Checking operations
Operation check WR5-8CSE	E	ME	SP		• Audio signal (PCM) 400 Hz	
Operation check WR5-4CL	L	MP	LP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) 400 Hz 60% modulation		
Operation check WR5-8CLE	E	ME	LP		• Audio signal (PCM) 400 Hz	
AFM stereo Operation check WR5-9CS	L	MP	SP	• Video signal Color bar 4 minutes Monoscope 4 minutes • Audio signal (AFM) Stereo section (color bar) Lch: 400 Hz, Rch: 1 kHz (L+R: 1.5 MHz ± 60 kHz DEV L–R: 1.7 MHz ± 30 kHz DEV) Bilingual section (Monoscope) MAIN: 400 Hz (1.5 MHz ± 60 kHz DEV) SUB: 1 kHz (1.7 MHz ± 30 kHz DEV)	• Audio signal (PCM) 400 Hz 8 minutes	AFM stereo Checking operations

Note: Recording mode

L ·············· Normal (Conventional) mode

E ·············· hi8 (hi band) mode

Tape type

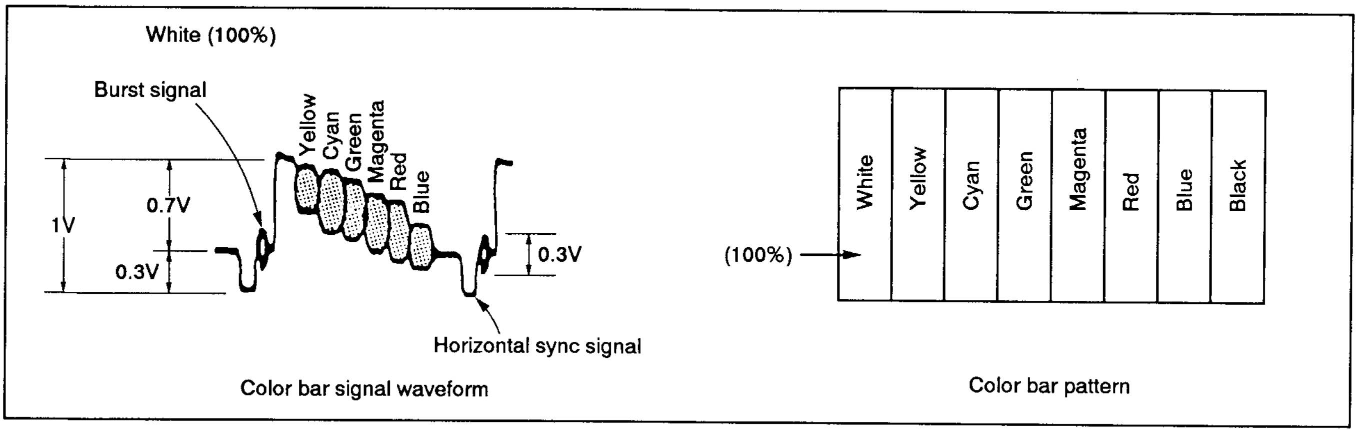
MP············ Particle type metal tape

ME············ Evaporated type metal tape

Table 10-2.

Fig. 10-5. shows the 75% color bar signals recorded on the alignment tape.

Note: Measured at VIDEO OUT terminal (75Ω termination).


White (100%)
Burst signal
Yellow
Cyan
Green
Magenta
Red
Blue
1V
0.7V
0.3V
0.3V
Horizontal sync signal
(100%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Black

Color bar signal waveform

Color bar pattern

Fig. 10-5. Alignment tape color bar signal

10-1-8. Output Level and Impedance

Video output	Pin jack Output signal: 1 Vp-p, 75Ω unbalanced, sync negative
S video output	Four pins mini DIN Luminance signal: 1 Vp-p, 75Ω unbalanced, sync negative Color signal: 0.3 Vp-p, 75Ω unbalanced
Audio output	Pin jack Specified output: –7.5 dBs Output impedance: Below 2.2 kΩ

10-1-9. Record Mode (Normal/Hi8) Switchover

The record mode (Normal/Hi8) of this unit is switched as shown in the following table. The playback mode (Normal/Hi8) is switched automatically according to the record mode of the tape played back.

Hi8 Switch (CF-4 board S203)	Tape Used	Record Mode
Automatic	ME	Hi8
	Hi8 MP	
	MP	Normal
Off	ME	Normal
	Hi8 MP	
	MP	

Table 10-3.

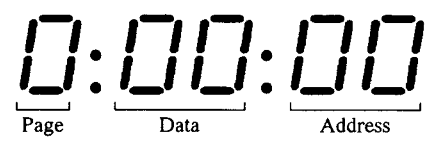
10-1-10. Service Mode

1. Setting the Service mode

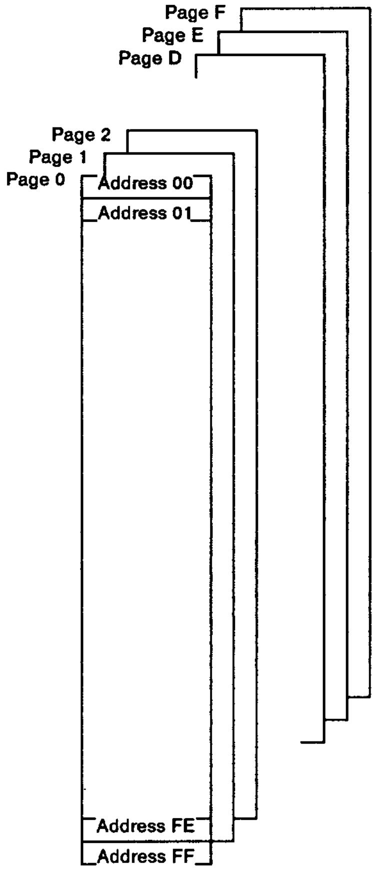
The service mode consists of the adjustment mode which adjusts the EVR and the test mode which displays the condition of the unit.

The unit can be shifted into the test mode and adjustment mode by connecting the adjusting remote control unit (set the HOLD switch to the HOLD side).

Adjusting Remote Control Unit LCD Display

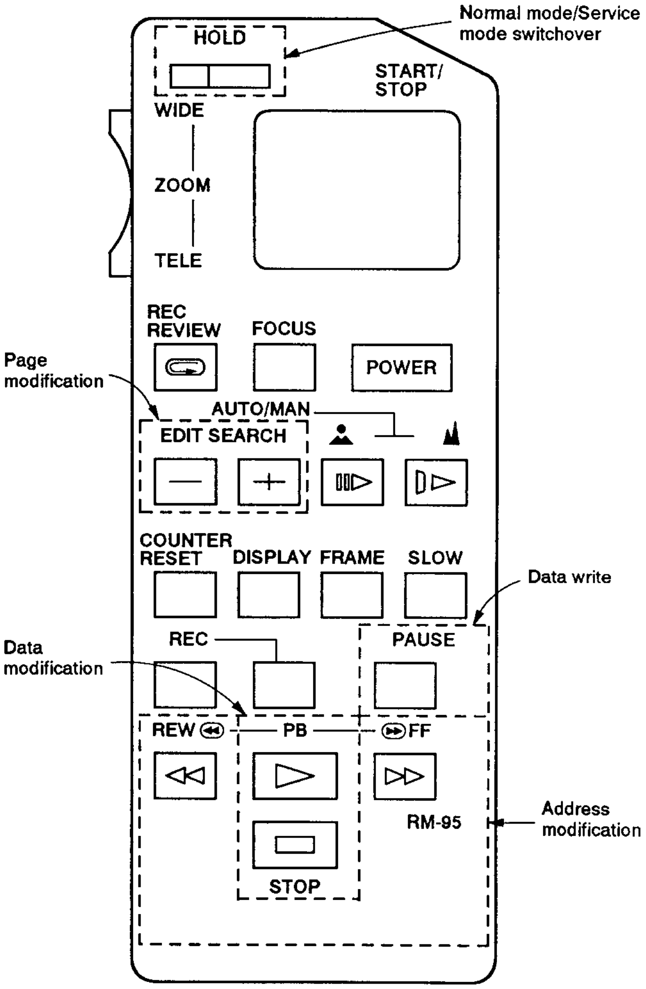

0:00:00
Page
Data
Address

(1) Service LANC memory map


Page F
Page E
Page D
Page 2
Page 1
Page 0
Address 00
Address 01
Address FE
Address FF

Page	Page assignment
0	
1	Mode controller RAM, I/O (Note 1)
2	Mechanism controller RAM, I/O (Note 1)
3	
4	
5	
6	Camera controller RAM, I/O (Note 1)
7	
8	
9	
A	Camera controller RAM, I/O (Note 1)
B	
C	
D	VTR EE PROM (Note 2)
E	Camera EE PROM (VAP) (Note 3)
F	Camera EE PROM (Note 3)

Adjusting remote control unit RM-95 (J-6082-053-A)

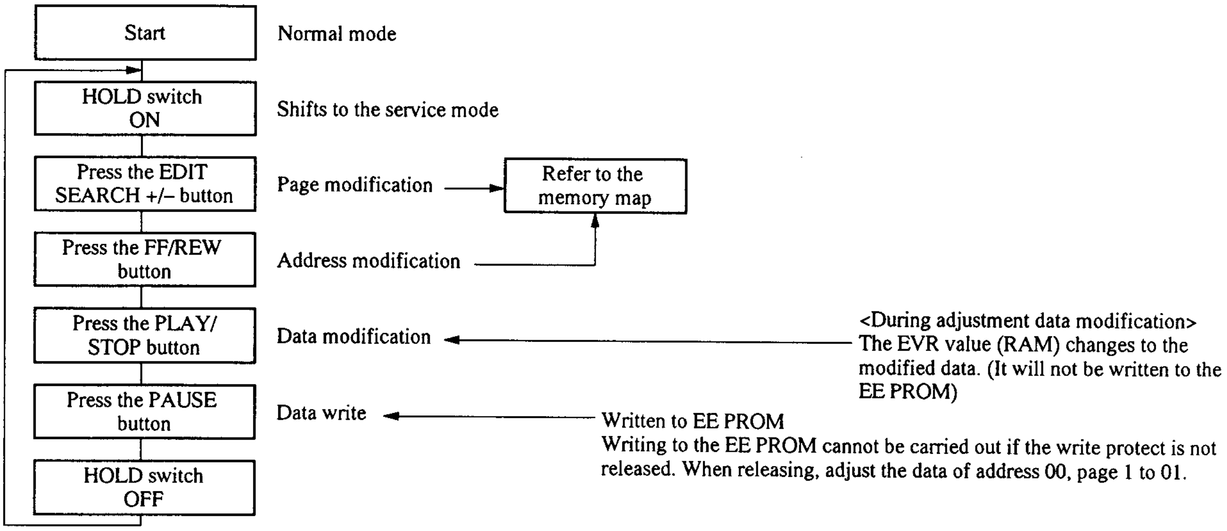

Normal mode/Service mode switchover
HOLD
START/STOP
WIDE
ZOOM
TELE
REC REVIEW
FOCUS
POWER
Page modification
AUTO/MAN
EDIT SEARCH
COUNTER RESET
DISPLAY
FRAME
SLOW
Data write
Data modification
REC
PAUSE
REW
PB
FF
RM-95
STOP
Address modification

Note 1: If the data of this page is rewritten using the adjusting remote control unit to set the adjustment mode or test mode, this data will not be written in the EEPROM (non-volatile memory). The original condition (normal condition) can be returned by removing the main power supply (6.3V).

Note 2: The data of this page is written in the EEPROM (VC-135 board IC923).

Note 3: The data of this page is written in the EEPROM (VC-135 board IC701).

Shifting to the Service Mode Using the Adjusting Remote Control Unit


Start
Normal mode
HOLD switch ON
Shifts to the service mode
Press the EDIT SEARCH +/– button
Page modification
Refer to the memory map
Press the FF/REW button
Address modification
Press the PLAY/ STOP button
Data modification
Press the PAUSE button
Data write
HOLD switch OFF

<During adjustment data modification>
The EVR value (RAM) changes to the modified data. (It will not be written to the EE PROM)

Written to EE PROM
Writing to the EE PROM cannot be carried out if the write protect is not released. When releasing, adjust the data of address 00, page 1 to 01.

Command Name	Command Function	Normal LANC command
Page Up	Page +1	Edit Search +
Page Down	Page –1	Edit Search –
Direc Page Set	Sets the specified page	Event Clear
Address Up	Address +1	Fast Forward
Address Down	Address –1	Rewind
Data Up	Data +1	Play Back
Data Down	Data –1	Stop
Store	Writes the data to the EE PROM. RAM	Pause

2. Page D Write Protect

Release/set the page D write protect.

Page 1	Address 00

Data	Function
00	Normal (Write protect condition)
01	Write protect release

3. Test Mode Setting

Each type of test mode is set/released. Release the protect (page: 1, address: 00, data: 01), before setting the data.

Page D (or Page 4)	Address 01

Data	Function
00	Normal
01	Test mode 1 Various emergency inhibition and release Drum, capstan, loading motor, reel, tape top, end, DEW SP/LP automatic distinction inhibition, manual switchover (EDIT SW ON: LP, OFF: SP) 5 minutes pause release inhibition Power off inhibition release by battery end
02	Test mode 2 Do not use
03	Test mode 3 Track shift Plays back the track shift Rear lock distinction inhibition during PB SP/LP automatic distinction inhibition, manual switchover (EDIT SW ON: LP, OFF: SP)
04	Test mode 4 Rear lock mode Rear lock playback is performed SP/LP automatic distinction inhibition, manual switchover (EDIT SW ON: LP, OFF: SP)
05	Test mode 5 SP/LP automatic distinction inhibition, manual switchover (EDIT SW ON: LP, OFF: SP)

※ Page: D and page: 4 have the same functions. However, the data cannot be written in the non-volatile memory (EEPROM) for page: 4.

※ This address data will be recorded on the non-volatile memory by pressing the PAUSE button on the adjusting remote control unit for page: D. Take note, as when this happens, the test mode will not be released even if the main power is turned off (6.3 Vdc).

※ Be sure to return the data of this address data to 00 after completing adjustments/repairs, and press the PAUSE button on the adjusting remote control unit.

4. Emergency code

Faults (errors) can be checked.

Page D	Address 06

First emergency code

……The first error code generated

Page D	Address 07

Last emergency code

…… The last error code generated (this data will be renewed each time an error occurs.)

※ Be sure to rewrite the data of addresses 06 and 07 to 00 after completing repairs/adjustments.

※ When rewriting data, be sure to press the PAUSE button of the remote control unit after setting the data.

Code	Error condition
00	No error
01	Loading motor error
02	Reel error during unloading
03	Other reel errors
04	Capstan error
05	FG error during drum start up
06	PG error during drum start up
07	FG error during drum regular condition
08	PG error during drum regular condition
09	Phase error during drum regular condition

5. Emergency mode

The operation mode during an error outbreak can be checked.

Page D	Address 08

First emergency mode

······The operation mode when the first error is generated

Page D	Address 09

Last emergency mode

······The operation mode when the last error is generated
(This data will be renewed each time an error occurs.)

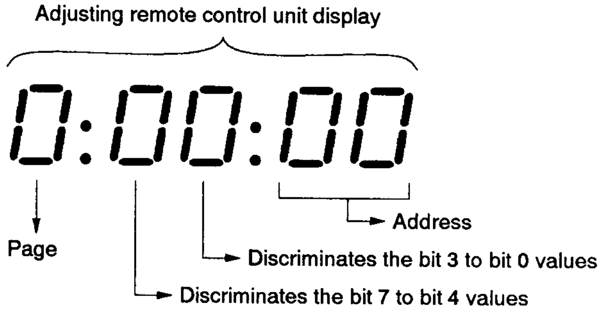
※ Be sure to rewrite the data of addresses 08 and 09 to 00 after completing repairs/adjustments.

※ When rewriting data, be sure to press the PAUSE button of the adjusting remote control unit after setting the data.

Code	Error condition
00	BEFOR INITIALIZE
01	EJECTED
02	NORMAL STOP
03	FF
04	NORMAL REC
06	NORMAL PB
07	PB PAUSE
12	LOADING
14	REC PAUSE
27	1/5 SLOW
31	UNLOADING
46	CUE
56	REVIEW
62	STOP TAPE END
67	FRAME
72	STOP TAPE TOP
83	REWIND
85	REC REVIEW(+)
95	REC REVIEW(–)
A2	EMERGENCY STOP
A5	EDIT SEARCH(+)
B1	EMERGENCY UNLOADING
B2	STOP EMERGENCY 1
B5	EDIT SEARCH(–)
C2	STOP EMERGENCY 2
E2	STOP NO CASSETTE
F5	EDIT PAUSE

6. Bit Value Discrimination

It is necessary to discriminate the bit values with the display data on the adjusting remote control unit for the following items. Use the following table to discriminate if the bit value is "1" or "0".


Adjusting remote control unit display
0:00:00
Address
Page
Discriminates the bit 3 to bit 0 values
Discriminates the bit 7 to bit 4 values

	Remote Control Unit Display	Bit Value			
		bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ→	8	1	0	0	0
	9	1	0	0	1
	A (A)	1	0	1	0
	B (b)	1	0	1	1
	C (c)	1	1	0	0
	D (d)	1	1	0	1
Ⓑ→	E (E)	1	1	1	0
	F (F)	1	1	1	1

(Example) If the remote control unit display data is "8E", the bit value of bit7 to bit4 can be discriminated from column Ⓐ, and that of bit3 to bit0 from column Ⓑ.

7. Cassette Compartment Lock Switch Check

Page 1	Address 23

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
					CC LOCK		

Bit2 CC LOCK:
"0"=Up
"1"=Down (Lock)

8. Mechanism Section Switches Check, Etc.

Page 1	Address 3E

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
	Mode switch						
MSW C	MSW B	MSW A		REC PROOF	ME/MP	PB E/L	Hi8 MP

Bit3 REC PROOF:
"1"=Record prohibited
"0"=Record possible

Bit2 ME/MP:
"1"=ME tape
"0"=MP tape

Bit1 PB E/L:
"1"=Hi8 mode playback
"0"=Others

Bit0 Hi8 MP:
"1"=Hi8 MP tape
"0"=Others

Mode Switch Position	**Adjusting Remote Control Unit Display**
READY (STOP)	2*
GL	4*
USE	6*
EJECT	8*
RP (REC, PB, FF, REW, CUE, REVIEW, PAUSE)	A*
LS	C*
BL	D*

*: 0 to F

9. Mechanism Control (VS-101 board IC153) Condition Check

Page 1	Address 3D

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
VIDEO MUTE	AUDIO MUTE	VA PB MODE	JOG	PB CLOG	REC CLOG	SYNC DET	PB SP/LP DET

"1"=LP playback
"0"=Others

"1"=VTR SYNC present
"0"=No VTR SYNC

"1"=Head clog generation
"0"=Others

"1"=No video signal
"0"=Video signal present

"1"=Variable speed playback
"0"=Others

"1"=PB mode
"0"=E-E mode

"1"=Mute
"0"=Audio output

"1"=Mute
"0"=Video output

10. Mechanism Control Input Check

Page 1	Address 42

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
VIDEO MUTE	AUDIO MUTE	VA PB MODE	JOG	PB CLOG	REC CLOG	SYNC DET	PB SP/LP DET

"0"=Dew outbreak
"1"=Others

"0"=S VIDEO terminal connection condition
"1"=S VIDEO terminal open condition

"0"=During monaural external microphone use
"1"=Others

"1"=Audio input/output terminal (right) open condition
"0"=Audio input/output terminal (right) connection condition

"1"=During AFM stereo/bilingual tape playback
"0"=Others

11. Mechanism Control A/D Port Input Voltage Check

Page 4	Address 14

Checking method:

1) Set data 02 to page: 4, address: 0E.
   (A/D conversion processing active)
2) Set the following data to page: 4, address: 13, and select the A/D port to be displayed.

Data	Operation
00	Pin (62): AN0 (T REEL FG)
01	Pin (61): AN1 (S REEL FG)
02	Pin (60): AN2 (ATF ERROR)
03	Pin (59): AN3 (BATT SENS)
04	Pin (58): AN4 ($\overline{\text{DEW}}$)

3) Check the data of page: 4, address: 14.

Adjusting Remote Control Unit Display Data	A/D Port Input Voltage
FF to 00	Approx. 5 Vdc to 0 Vdc

12. Tape Top/End Sensor Condition

Page 4	Address 0A

Checking method:

1) Set data 10 to page: 4, address: 0E.
   (Tape top/end sensor condition sampling processing active)
2) Check the data of page: 4, address: 0A.

Adjusting Remote Control Unit Display Data	Tape Top/End Sensor Condition
0 0	Tape present (Middle of tape)
0 1	Tape end
1 0	Tape top
1 1	No tape

Tape end sensor condition
Tape top sensor condition

"0"=Non active
(Not receiving light)
"1"=Active
(Receiving light)

13. Individual Operations of the Drum, Capstan, and Loading Motor

Page 4	Address 11

1) Adjust the mechanical section to the loading completion condition.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Set data: 01 to page: 4, address: 0E.
   (Control permission from the adjusting remote control unit of the motor)
4) By setting the data in the following table to page: 4, address: 11, the corresponding motors can be operated individually.

Data	Operation
00	Normal
02	Drum forward rotation
04	Drum reverse rotation
06	Capstan forward rotation
08	Capstan reverse rotation
0A	Loading motor forward rotation
0C	Loading motor reverse rotation
01	All motors stop
03	
05	
07	
09	
0B	
0D	
0F	

6) After checking the operations, turn off the main power (6.3 Vdc).

14. Key Matrix Input Check

Page 1	Address 68 to 6F

The corresponding bit when the switch is on is "1".

	Bit 7	Bit 6 (K IN 6)	Bit 5 (K IN 5)	Bit 4 (K IN 4)	Bit 3 (K IN 3)	Bit 2 (K IN 2)	Bit 1 (K IN 1)	Bit 0 (K IN 0)
Address 68 (K OUT 0)			Video power supply (FK-4 S119)	Data screen (FK-4 S115)	Pause (FK-4 S112)	Record	Eject (FK-4 S103)	Hi-Fi sound (1) (CF-4 S201)
Address 69 (K OUT 1)		Steady shot (CF-4 S216)	Camera power supply (FK-4 S118, 119)	Fast forward (FK-4 S116)	Playback (FK-4 S113)	Rewind (FK-4 S110)	Stop (FK-4 S104)	Hi-Fi sound (2) (CF-4 S201)
Address 6A (K OUT 2)			Zoom microphone (MA-174 S901)	Zero memory (FK-4 S117)	Edit search (+) (FK-4 S114)	Edit search (–) (FK-4 S111)	Counter reset (FK-4 S105)	Edit (CF-4 S202)
Address 6B (K OUT 3)		Auto-lock (CF-4 S217)		Shutter speed (CF-4 S212)	Time (CF-4 S209)	Date (CF-4 S207)	White balance (CF-4 S204)	Hi8 (CF-4 S203)
Address 6C (K OUT 4)		Exposure (+) (CF-4 S218)		Focus (CF-4 S213)	Color/mode (CF-4 S210)	Memory (CF-4 S208)	Superimpose on/off (CF-4 S205)	Input/output
Address 6D (K OUT 5)		Exposure (–) (CF-4 S219)	Area (CF-4 S215)	Summer time (CF-4 S214)	Exposure (CF-4 S211)	Fader (MA-174 S902)	Start/stop (CF-4 S206)	

15. Hi8 Switch, Edit Switch Check

Page 1	Address 0A

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
		Hi8	Edit				

Edit:
"1"=Edit ON
"0"=Edit OFF

Hi8:
"1"=Off
"0"=Auto

16. Input/Output Switch, Hi-Fi Switch Check

Page 1	Address 0B

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
		Hi-Fi		Input/output			

Switch Position		
1	0	1
2	1	0
Stereo	0	0

Input/output:
"1"=Input
"0"=Output

17. Wireless Remote Control Unit Reception Content Check

Page 1	Address 1E

Wireless remote control unit key pressed	**Data**
None	FF
TELE	9A
WIDE	9B
Start/stop	99
Rewind	1B
Fast forward	1C
Stop	18
Playback	1A
Data screen	5A
Pause	19

18. White Balance Mode, Focus Mode Display/Switchover

Page 1	Address 9A

The mode can be switched when the data of page 1, address A3 is set to 04.

Data	White Balance Mode
*1	INDOOR
*2	OUTDOOR
*3	HOLD
*6	AUTO

Data	Focus Mode
0*	Manual
1*	Auto

* 0 to F

19. Electronic Shutter Speed Display/Switchover

Page 1	Address 9B

The speed can be switched when the auto-lock switch is turned OFF.

Data	Shutter Speed
00	1/50
01	1/100
02	1/250
03	1/1000
04	1/2000
05	1/4000
06	1/10000

20. LCD, LED Check, Etc.

Page 1	Address A3

Data	Mode
00	Normal
01	Key input prohibited
02	All segments of LCD, LED light up
04	Camera function renewal prohibited

21. Time Code Check

Page 1	Address BB to BE

Data	Adjusting remote control unit display data contents	
BB	Hour	BCD code ("FF" when the time code is not recorded/played back)
BC	Minutes	
BD	Seconds	
BE	Frame No.	

22. Data Code Check

Page 1	Address D0 to D5

Data	Adjusting remote control unit display data contents	
D0	Second	BCD code
D1	Minute	
D2	Hour	
D3	Day	
D4	Month	
D5	Year	

23. Page D Address List

Note 1: The adjustment data initial value is data input before performing video section adjustment (Page D) when the Page D data has been lost due to some reason.

Note 2: The data listed in the adjusting data memo column are fixed.
After adjusting, check that these data have been rewritten correctly.

Address	Name	Function ( ) indicates the adjusting voltage output terminal.	Adjusting Data	
			Initial Value	Memo Column
00	Category code	World clock standard area	00	00
01	Test mode	Test mode	00	00
02	Destination flag	Destination flag	82	82
03	BATT END	Battery end adjustment	8E	
04	SW POSITION (LOW)	SW POSITION adjustment (Top)	00	
05	SW POSITION (HIGH)	SW POSITION adjustment (Bottom)	80	
06	EMERGENCY code (FIRST)	Error codes and modes are recorded. Rewrite the data of these addresses to 00 after completing repairs/adjustments.	00	00
07	EMERGENCY code (LAST)		00	00
08	EMERGENCY mode (FIRST)		00	00
09	EMERGENCY mode (LAST)		00	00
0A	SR DATA (MP NORMAL SP)	CXA1207 serial data	67	67
0B	SR DATA (MP NORMAL LP)	CXA1207 serial data	5F	5F
0C	SR DATA (ME HI8 SP)	CXA1207 serial data	69	69
0D	SR DATA (ME HI8 LP)	CXA1207 serial data	6F	6F
0E	SR DATA (ME NORMAL SP)	CXA1207 serial data	68	68
0F	SR DATA (ME NORMAL LP)	CXA1207 serial data	5C	5C
10	SR DATA (MP HI8 SP)	CXA1207 serial data	63	63
11	SR DATA (MP HI8 LP)	CXA1207 serial data	5F	5F
12	SR DATA (EDIT ON NORMAL)	CXA1207 serial data	5C	5C
13	SR DATA (EDIT ON HI8)	CXA1207 serial data	65	65
14	CAM TITLE BLU R–Y	Camera titler color adjustment (Blue)	7D	
15	CAM TITLE BLU B–Y	Camera titler color adjustment (Blue)	BA	
16	CAM TITLE GRN R–Y	Camera titler color adjustment (Green)	62	
17	CAM TITLE GRN B–Y	Camera titler color adjustment (Green)	46	
18	CAM TITLE CYN R–Y	Camera titler color adjustment (Cyan)	60	
19	CAM TITLE CYN B–Y	Camera titler color adjustment (Cyan)	86	
1A	CAM TITLE RED R–Y	Camera titler color adjustment (Red)	A0	
1B	CAM TITLE RED B–Y	Camera titler color adjustment (Red)	7A	
1C	CAM TITLE VIO R–Y	Camera titler color adjustment (Violet)	9E	
1D	CAM TITLE VIO B–Y	Camera titler color adjustment (Violet)	BA	
1E	CAM TITLE YEL R–Y	Camera titler color adjustment (Yellow)	82	
1F	CAM TITLE YEL B–Y	Camera titler color adjustment (Yellow)	45	
20		DDS display starting year, EJECT permission etc.	70	70
21		CAM P ON, VTR P ON etc.	00	00
22 to 2C		Not used.	FF	FF
2D	BATT REMAIN level 1	Battery end adjustment	9C	
2E	BATT REMAIN level 2		98	
2F	BATT REMAIN level 3		93	

Table 10-4 (1).

Address	Name	Function ( ) indicates the adjusting voltage output terminal.	Adjusting Data	
			Initial Value	Memo Column
30	REC C 1A (ME)	ME 1Ach REC C level adjustment (IC305 ⑥)	B8	
31	REC C 1A (MP)	MP 1Ach REC C level adjustment (IC305 ⑥)	B8	
32	REC C 1B (ME)	ME 1Bch REC C level adjustment (IC305 ⑦)	B8	
33	REC C 1B (MP)	MP 1Bch REC C level adjustment (IC305 ⑦)	B8	
34	REC C 2A (ME)	ME 2Ach REC C level adjustment (IC305 ⑧)	B8	
35	REC C 2A (MP)	MP 2Ach REC C level adjustment (IC305 ⑧)	B8	
36	REC C 2B (ME)	ME 2Bch REC C level adjustment (IC305 ⑨)	B8	
37	REC C 2B (MP)	MP 2Bch REC C level adjustment (IC305 ⑨)	B8	
38	CAP FG OFFSET	Capstan FG bias adjustment (IC305 ⑬)	80	
39		Not used.	FF	FF
3A		Not used.	FF	FF
3B	MT Q		80	80
3C	MT F0 (E)	Hi8 middle tune f0 frequency (IC306 ④)	60	60
3D	MT F0 (L)	Normal middle tune f0 frequency (IC306 ④)	50	50
3E	MT 2A (E)	Hi8 2Ach frequency characteristics adjustment (IC306 ⑲)	8A	
3F	MT 2A (L)	Normal 2Ach frequency characteristics adjustment (IC306 ⑲)	8A	
40	MT 2B (E)	Hi8 2Bch frequency characteristics adjustment (IC306 ③)	89	
41	MT 2B (L)	Normal 2Bch frequency characteristics adjustment (IC306 ③)	89	
42	MT 1A (E)	Hi8 1Ach frequency characteristics adjustment (IC306 ⑱)	80	
43	MT 1A (L)	Normal 1Ach frequency characteristics adjustment (IC306 ⑱)	80	
44	MT 1B (E)	Hi8 1Bch frequency characteristics adjustment (IC306 ②)	81	
45	MT 1B (L)	Normal 1Bch frequency characteristics adjustment (IC306 ②)	81	
46	REC C RF (REC)	REC C RF level adjustment (IC305 ③)	9E	
47	REC C RF (PB)	PB mode REC C RF level (IC305 ③)	00	00
48	RF CONT (ME)	ME RF CONT (IC305 ⑤)	4B	4B
49	RF CONT (MP)	MP RF CONT (IC305 ⑤)	4B	4B
4A	SYNC AGC	SYNC AGC adjustment (IC304 ⑱)	6D	
4B		Not used.	FF	FF
4C	C COMB	Chroma comb filter adjustment (IC304 ⑲)	90	
4D	IR	IR adjustment (IC304 ④)	A2	
4E	CAR.-E	Hi8 Y-FM carrier frequency adjustment (IC304 ⑤)	A7	
4F	CAR.-L	Normal Y-FM carrier frequency adjustment (IC304 ⑤)	A4	
50	DEV.-E	Hi8 Y-FM deviation adjustment (IC304 ⑥)	A1	
51	DEV.-L	Normal Y-FM deviation adjustment (IC304 ⑥)	95	
52	REC Y CONT (ME E)	Hi8 ME REC Y level adjustment (IC305 ⑫)	8F	
53	REC Y CONT (MP E)	Hi8 MP REC Y level adjustment (IC305 ⑫)	8F	
54	REC Y CONT (ME L)	Normal ME REC Y level adjustment (IC305 ⑫)	88	
55	REC Y CONT (MP L)	Normal MP REC Y level adjustment (IC305 ⑫)	8A	
56	REC Y CONT (PB)	PB mode REC Y level (IC305 ⑫)	90	90
57	PB Y (EE)	EE mode PB Y level (IC304 ⑨)	00	00

Table 10-4 (2).

10-2. POWER SYSTEM ADJUSTMENTS

1. Oscillator Frequency Adjustment (DD-58 board)

Mode	Camera record
Subject	Arbitrary
Measurement Point	Q238 collector
Measuring Instrument	Frequency counter
Adjusting Element	RV231
Specified Value	475 ± 5 kHz

Adjusting method:

1) Adjust RV231 so that the oscillator frequency becomes the specified value.

2. Voltage Adjustment (DD-58 board)

Mode	Camera record
Subject	Arbitrary
Measurement Point	Pin ㉖ of CN203 (VID 5V)
Measuring Instrument	Digital voltmeter
Adjusting Element	RV232
Specified Value	4.92 ± 0.01 Vdc

Adjusting method:

1) Adjust RV232 so that the VID 5V voltage becomes the specified value.

3. Power Voltage Check (DD-58 board)

Mode	Camera record
Subject	Arbitrary
Measuring Instrument	Digital voltmeter
EVR 5V check	
Measurement Point	Pins ㉑ and ㉔ of CN203
Specified Value	4.97 ± 0.15 Vdc
SS5V check	
Measurement Point	Pins ⑮ and ⑱ of CN203
Specified Value	4.87 ± 0.15 Vdc
M5V (2) check	
Measurement Point	Pins ⑩, ⑪ and ⑫ of CN203
Specified Value	5.03 ± 0.15 Vdc
VID 5V check	
Measurement Point	Pins ㉕ and ㉖ of CN203
Specified Value	4.92 ± 0.02 Vdc
AU 5V check	
Measurement Point	Pins ⑰ and ⑳ of CN203
Specified Value	4.89 ± 0.15 Vdc
DIG 5V check	
Measurement Point	Pins ⑨ and ⑩ of CN202
Specified Value	$4.85^{+1.15}_{-0.05}$ Vdc
CAM 5V check	
Measurement Point	Pins ①, ③ and ⑥ of CN202
Specified Value	4.90 ± 0.05 Vdc
CAM 15V check	
Measurement Point	Pin ② of CN202
Specified Value	15.00 ± 0.15 Vdc
CAM –9V check	
Measurement Point	Pin ④ of CN202
Specified Value	–8.40 ± 0.40 Vdc
M5V check	
Measurement Point	Pins ⑭ and ⑮ of CN202
Specified Value	4.98 ± 0.15 Vdc

10-3. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Page D Initial Value Input

If the page D data has been erased due to some cause, input the page D initial value before performing adjustments. For details on the initial value, refer to "Page D address list" in "10-1-10. Service Mode".

Mode	E-E
Signal	Arbitrary
Adjustment Page	D
Adjustment Address	00 to AF

Input method:

1) Release the write protect.
   Page: 1, address: 00, data: 01
2) Select page D, and input the initial value to each address.
   (After setting the data (initial value), be sure to press the PAUSE button of the adjusting remote control unit before changing the address.)

2. Battery End Adjustment

Mode	E-E
Signal	Arbitrary
Measurement Point	LCD display of the adjusting remote control unit
Measuring Instrument	
Adjustment Page	D
Specified Value	03 (BATT END)

Connection:

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 10-6.

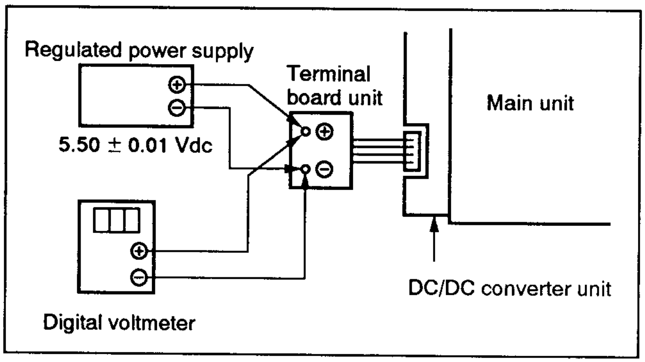


Fig. 10-6.

Adjusting method:

1) Adjust the regulated power supply output voltage so that the digital voltmeter display is 6.3 ± 0.1 Vdc.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Set data: 01 to page: D, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Test mode 1 setting)
4) Decrease the voltage so that the digital voltmeter display is 5.50 ± 0.01 Vdc.
5) Select page: 4, address: 10, read the adjusting remote control unit display data, and take it as D03.
6) Set data D03 to page: D, address: 03, and press the PAUSE button of the adjusting remote control unit.
7) Convert D03 to decimal to obtain D03′. (Refer to Table 8-7. "Hexadecimal notation – decimal notation conversion table")
8) Obtain the adjustment data (decimal) by following formula (decimal notation calculation), convert to hexadecimal and enter the data into each adjustment address.
   Address: 2D D2D′=D03′+14
   Address: 2E D2E′=D03′+10
   Address: 2F D2F′=D03′+5
   Note: After setting the data, be sure to press the PAUSE button of the adjusting remote control unit before changing the address.
9) Set data: 00 to page: D, address: 01, and press the PAUSE button of the adjusting remote control unit.
   (Test mode 1 release)
10) Turn off the power supply.
11) Perform "Battery Down Check".

3. Battery Down Check

Mode	Camera record
Subject	Arbitrary

Connection

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 10-6.

Checking method:

Remove the adjusting remote control unit, and perform the following check. If the check is not satisfied, perform from the beginning again.

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display becomes 6.3 ± 0.1 Vdc.
2) Set to the camera recording mode.
3) Decrease the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.65 ± 0.01 Vdc.
4) Check that the 🔋 mark on the EVF (viewfinder) display is not lighted up. (TALLY lamp lights up).
5) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.53 ± 0.01 Vdc.
6) Check that the 🔋 mark and the TALLY lamp on the EVF display on the EVF display blinks every second.
7) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.47 ± 0.01 Vdc.
8) Check that the 🔋 mark and the TALLY lamp on the EVF display are blinking faster, the VTR stops and the power supply turns off.

10-4. SERVO SYSTEM ADJUSTMENTS

1. Switching Position Adjustment (FP-484 board)

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1CP)
Measurement Point	CH1: Pin ⑨ of CN002 (RF SWP) CH2: Pin ⑫ of CN002 (PB RF CH2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	04 (SW POSITION) (LOW) 05 (SW POSITION) (HIGH)
Specified Value	t1=0 ± 5 μsec

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Set data: 80 to page: D, address: 05.
3) Change the data of page: D, address: 05 (For coarse adjustments) and address: 04 (For fine adjustments), and adjust so that the switching position (t1) becomes the specified value.
   Note: Be sure to press the PAUSE button of the adjusting remote control unit before changing the address. If not, the new data will not be written in the memory.
4) Press the PAUSE button of the adjusting remote control unit.

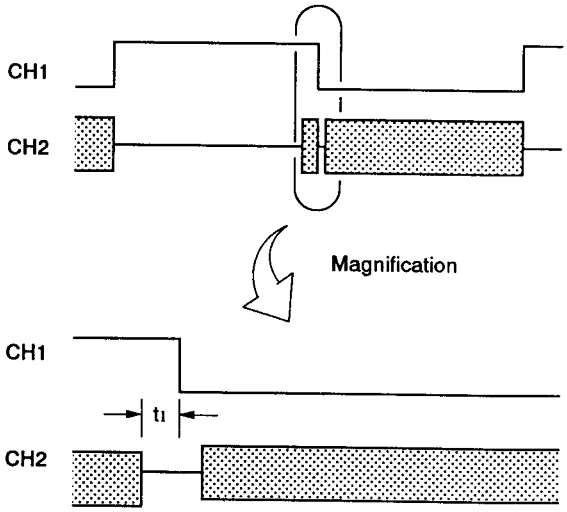


Fig. 10-7.

2. CAP FG Duty Adjustment (FP-484 board)

Mode	Record (SP)
Signal	Color bar
Measurement Point	Pin ④ of CN002 (CAP FG)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	38 (CAP FG BIAS)
Specified Value	Duty=50 ± 1%

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Set data: 80 to page: D, address: 38.
3) Change the data of page: D, address: 38, and adjust the duty of the CFG waveform to the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

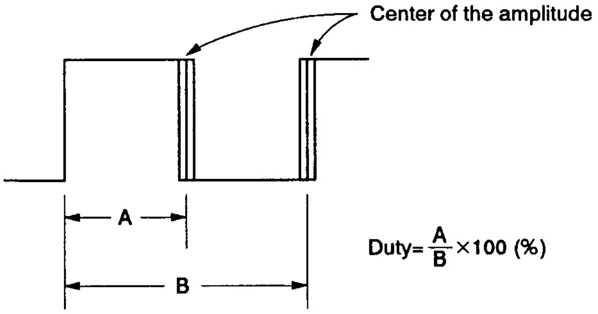


Fig. 10-8.

10-5. VIDEO ADJUSTMENTS

The adjustments of the video system must be performed according to the following adjustment procedure.
The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in recording mode. Check that the sync signal and the color burst signal satisfy the specification specified during the adjustment set-up shown in Figs. 10-3. and 10-4.
Use a ME tape unless specified otherwise. Check that the Hi8 switch is at "Auto".

[Adjusting procedure]

1) Playback frequency characteristics adjustment
2) Flying erase check
3) VXO oscillation frequency check
4) SYNC AGC level adjustment
5) IR adjustment
6) Chroma comb filter adjustment
7) Emphasis input level adjustment
8) PB Y level adjustment
9) PB LINE OUT level adjustment
10) Normal mode Y FM carrier frequency adjustment
11) Normal mode Y FM deviation adjustment
12) Hi8 mode Y FM carrier frequency adjustment
13) Hi8 mode Y FM deviation adjustment
14) Chroma emphasis fo adjustment
15) REC C RF level adjustment
16) REC Y level adjustment
17) REC L CONT adjustment
18) REC C preset adjustment
19) REC ATF level check
20) Chroma flicker check and adjustment
21) REC AFM level check
22) YD adjustment

1. Playback Frequency Characteristics Adjustment (FP-484 board)

Mode	Playback
Signal	Alignment tape: For Hi8 mode frequency characteristics adjustment (WR5-7CE)
Measurement Point	Refer to Fig. 10-9.
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	42 (MT 1A (E)), 44 (MT 1B (E)), 3E (MT 2A (E)), 40 (MT 2B (E)), 43 (MT 1A (L)), 45 (MT 1B (L)), 3F (MT 2A (L)), 41 (MT 2B (L))
Specified Value	4.5 MHz level: 7.0 MHz level= 4: (3.0 ± 0.2)

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of each address of page D, and adjust the level ratio of 4.5 MHz and 7.0 MHz of each PB RF output waveform of 1a, 1b, 2a, 2b to the specified value.
   Note: After each address adjustment, be sure to press the PAUSE button of the adjusting remote control unit and memorize the data.
3) Set data to address: 43, 45, 3F, 41 of Page: D as shown in the following table.
   (Be sure to press the PAUSE button of the adjusting remote control unit after setting each data.)

Address	Data
43	Same data as address: 42
45	Same data as address: 44
3F	Same data as address: 3E
41	Same data as address: 40

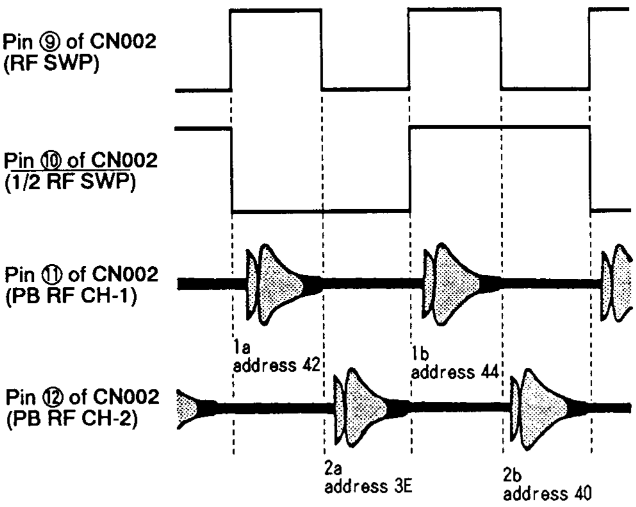

Pin ⑨ of CN002 (RF SWP)
Pin ⑩ of CN002 (1/2 RF SWP)
Pin ⑪ of CN002 (PB RF CH-1)
Pin ⑫ of CN002 (PB RF CH-2)
1a address 42
1b address 44
2a address 3E
2b address 40

Fig. 10-9.

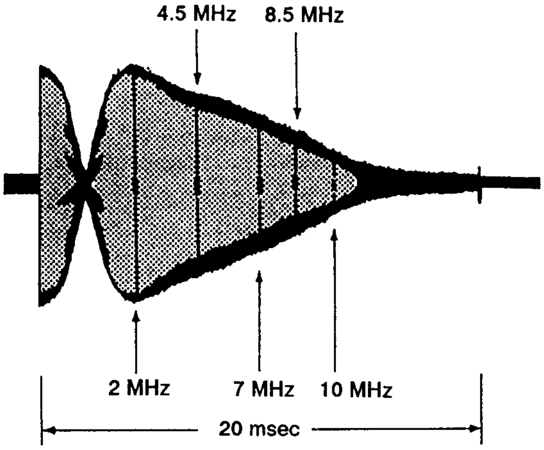


Fig. 10-10.

2. Flying Erase Check (VS-101 board)

Mode	Record
Signal	Arbitrary
Measurement Point	Pin ⑮ of CN001 (FE (X)) (JL001)
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: Above 7.5 MHz Voltage: Above 6.0 Vp-p

Note: Use a ME type tape.

Checking method:

1) Check that the oscillation frequency is above 7.5 MHz and that the oscillation voltage is above 6.0 Vp-p.

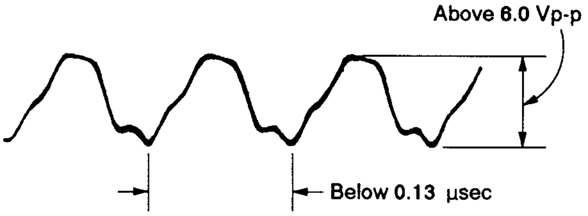


Fig. 10-11.

3. VXO Oscillation Frequency Check (VS-101 board)

Mode	Record
Signal	Color bar
Measurement Point	Pin ⑫ of IC501
Measuring Instrument	Frequency counter
Specified Value	4433618 ± 100 Hz

Note: Connect the frequency counter via a high impedance (approximately 10 MΩ) and low capacity (below 10 pF) buffer.

Adjusting method:

1) Check that the oscillation frequency of pin ⑫ of IC501 is 4433618 ± 100 Hz.

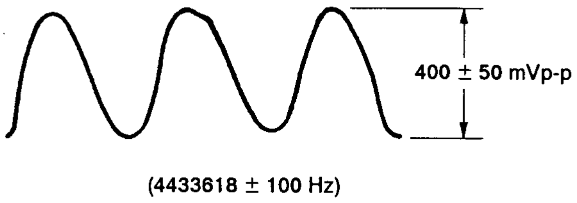


Fig. 10-12.

4. SYNC AGC Level Adjustment (VS-101 board)

Mode	Record
Signal	Color bar (S VIDEO)
Measurement Point	Pin ㉘ of IC401 (EE PB Y) (JL303)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4A (SYNC AGC)
Specified Value	A=0.5 ± 0.01V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 4A, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

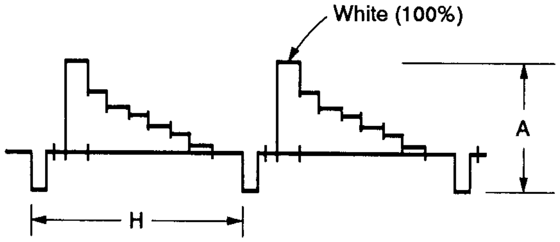


Fig. 10-13.

5. IR Adjustment (VS-101 board)

Mode	Record
Signal	Color bar (VIDEO)
Measurement Point	Pin ⑦ of IC401 (Y COMB OUT) (JL438)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4D (SR IR)
Specified Value	Residual chroma component (A) is minimum (below 50 mVp-p)

Connection

1) Connect pin ⑭ of IC401 (or pin ② of IC402) to pin (51) of IC401 with a jumper wire.

Adjusting method:

1) Check that the input is "VIDEO".
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Change the data of page: D, address: 4D, and adjust so that the residual chroma component (A) becomes minimum.
4) Press the PAUSE button of the adjusting remote control unit.

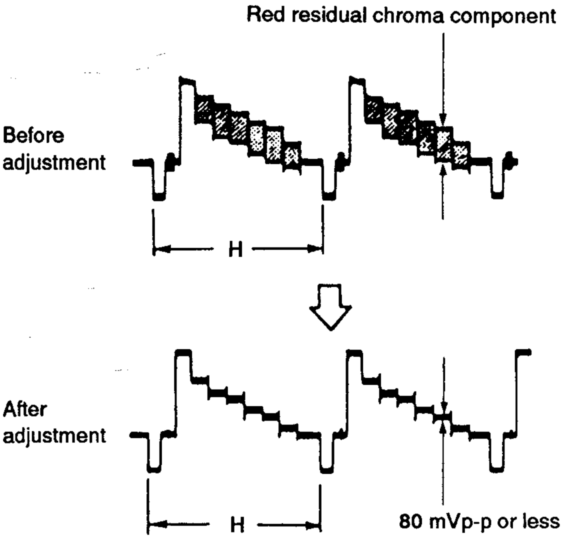

Red residual chroma component
Before adjustment
H
After adjustment
H
80 mVp-p or less

Fig. 10-14.

6. Chroma Comb Filter Adjustment (VS-101 board)

Mode	Record
Signal	Color bar (VIDEO)
Measurement Point	Pin ⑪ of IC401 (C+CD) (JL437)
Adjusting Element	Oscilloscope
Measuring Instrument	RV551 (Phase)
Adjustment Page	D
Adjustment Address	4C (C COMB)
Specified Value	Residual chroma component (A) is minimum.

Adjusting method:

1) Check that the input is "VIDEO".
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Change the data of page: D, address: 4C, and adjust the residual chroma component to minimum.
4) Adjust RV551 so that the residual chroma component (A) becomes minimum.
5) Repeat 3) and 4) until the specified value is satisfied.
6) Press the PAUSE button of the adjusting remote control unit.

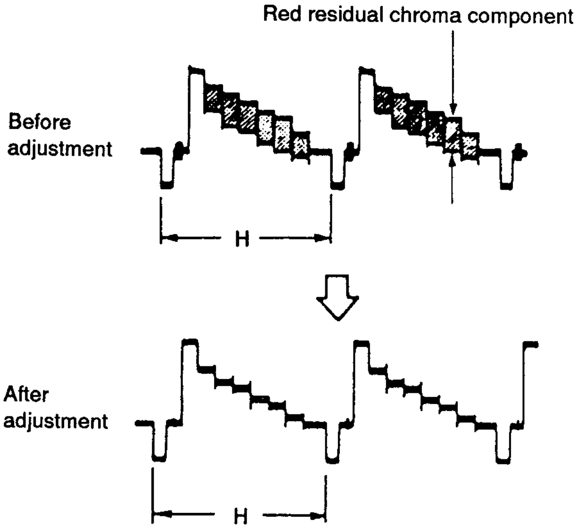

Red residual chroma component
Before adjustment
H
After adjustment
H

Fig. 10-15.

7. Emphasis Input Level Adjustment (VS-101 board)

Mode	Record
Signal	Color bar (S VIDEO)
Measurement Point	Pin ⑤ of IC403 (or Pin ③ of IC401) (JL447)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5A (EMP LEVEL)
Specified Value	A=0.50 ± 0.025V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 5A, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

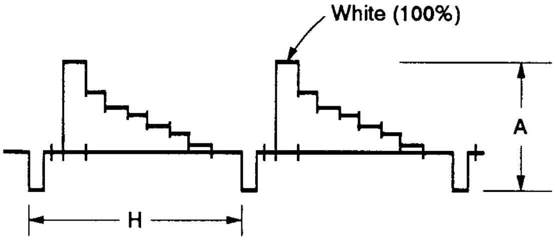


Fig. 10-16.

8. PB Y Level Adjustment (VS-101 board)

Mode	Playback
Signal	Alignment tape: For checking operations Color bar section • Normal mode WR5-5CSP • Hi8 mode WR5-8CSE
Measurement Point	Pin ⑮ of IC401 (JL435)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	• Normal mode 59 (PB YL) • Hi8 mode 58 (PB YE)
Specified Value	A=0.50 ± 0.025V

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Playback the color bar section of the normal mode alignment tape (WR5-5CSP).
3) Change the data of page: D, address: 59, and adjust so that the Y signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.
5) Playback the color bar section of the Hi8 mode alignment tape (WR5-8CSE).
6) Change the data of page: D, address: 58, and adjust so that the Y signal level (A) becomes the specified value.
7) Press the PAUSE button of the adjusting remote control unit.

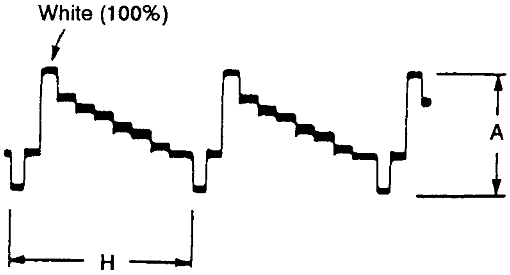


Fig. 10-17.

9. PB LINE OUT Level Adjustment

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-8CSP) Color bar section
Measurement Point	Pin ⑭ of W304 (S-Y I/O) (JL310)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5B (PB LINE LEVEL)
Specified Value	A=1.0 ± 0.025V

Note 1: Insert the plug into the S VIDEO output terminal.
2: Terminate the Y signal terminal of the S VIDEO output terminal at 75Ω .

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 5B, and adjust so that the video signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

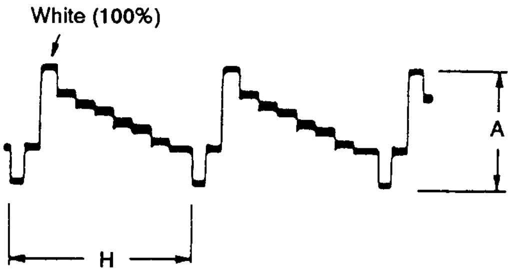


Fig. 10-18.

10. Normal Mode Y FM Carrier Frequency Adjustment (VS-101 board)

Mode	E-E
Signal	No signal
Measurement Point	Pin ㊸ of IC401 (Y RF OUT) (JL428)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	4F (CAR.-L)
Specified Value	4.38 ± 0.04 MHz

Adjusting method:
1) Insert a MP type tape.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Change the data of page: D, address: 4F, and adjust so that the Y FM carrier frequency becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

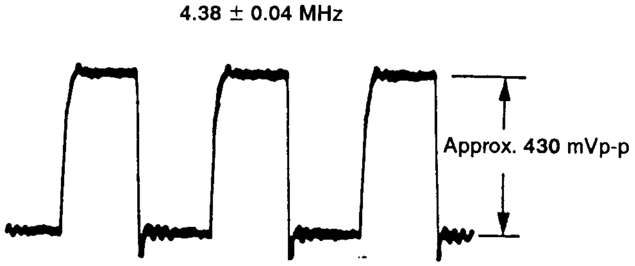


Fig. 10-19.

11. Normal Mode Y FM Deviation Adjustment (VS-101 board)

Mode	Record and playback
Signal	Color bar (S VIDEO)
Measurement Point	Pin ⑮ of IC401 (JL435)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	51 (DEV.-L)
Specified Value	A=0.50 ± 0.025V

Note: Check that "Emphasis Input Level Adjustment", and "PB Y Level Adjustment" have been completed.

Adjusting method:

1) Insert a MP type tape.
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Record the color bar signal.
4) Playback the recorded signal.
5) Check the playback signal level (A).
   Specification:A=0.50 ± 0.01V
6) If the specification is not satisfied, change the data of page: D, address: 51, and repeat steps 3) to 5).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

7) Press the PAUSE button of the adjusting remote control unit.
8) Perform "Normal Mode Y FM Carrier Frequency Adjustment".

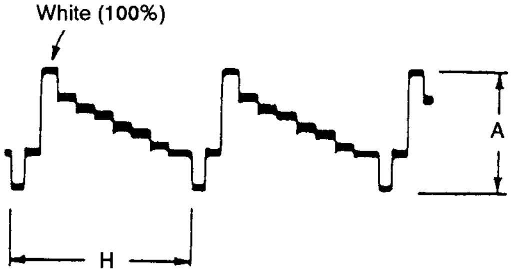


Fig. 10-20.

12. Hi8 Mode Y FM Carrier Frequency Adjustment (VS-101 board)

Mode	E-E
Signal	Non signal
Measurement Point	Pin ㊸ of IC401 (Y RF OUT) (JL428)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	4E (CAR.–E)
Specified Value	6.00 ± 0.04 MHz

Adjusting method:

1) Insert a ME type tape, and check that the "Hi8" switch is at "Auto".
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Change the data of page: D, address: 4E, and adjust so that the Y FM carrier frequency becomes the specified value.
4) Press the PAUSE button of the adjusting remote control unit.

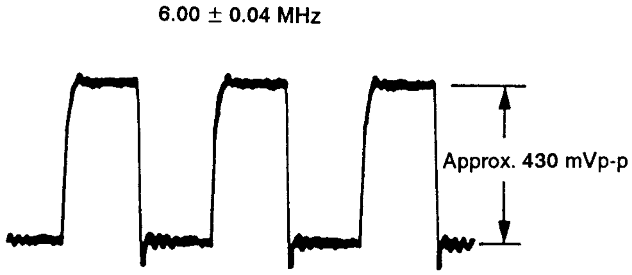


Fig. 10-21.

13. Hi8 Mode Y FM Deviation Adjustment (VS-101 board)

Mode	Record and playback
Signal	Color bar (S VIDEO)
Measurement Point	Pin ⑮ of IC401 (JL435)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	50 (DEV.–E)
Specified Value	A=0.50 ± 0.025V

Note: Check that "Emphasis Input Level Adjustment" and "PB Y Level Adjustment" have been completed.

Adjusting method:

1) Insert a ME type tape, and check that the "Hi8" switch is at "Auto".
2) Release the protect.
   Page: 1, address: 00, data: 01
3) Record the color bar signal.
4) Playback the recorded signal.
5) Check the playback signal level (A).
   Specification: A=0.50 ± 0.01V
6) If the specification is not satisfied, change the data of page: D, address: 50, and repeat steps 3) to 5).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

7) Press the PAUSE button of the adjusting remote control unit.
8) Perform "Hi8 Mode Y FM Carrier Frequency Adjustment".

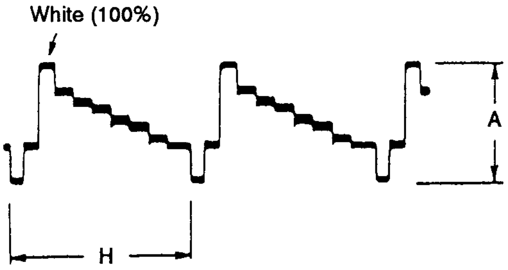


Fig. 10-22.

14. Chroma Emphasis fo Adjustment (VS-101 board)

Mode	Record
Signal	Color bar (VIDEO)
Measurement Point	Pin ㉔ of IC501 (JL504)
Measuring Instrument	Oscilloscope
Adjustment Element	FL502
Specified Value	Minimum f0 component

Adjusting method

1) Adjust FL502 so that the amplitude of the latter section of the chroma signal (yellow section) becomes minimum.

Minimize the amplitude of the latter section of the yellow section.

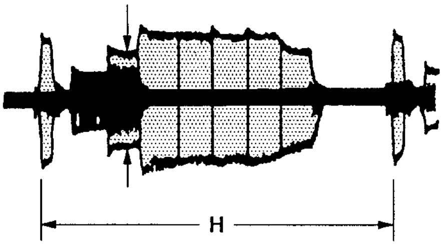


Fig. 10-23.

15. REC C RF Level Adjustment (VS-101 board)

Mode	Record
Signal	Color bar (VIDEO)
Measurement Point	Pin ③ of IC503 (REC C RF) (JL427)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	46 (REC C RF)
Specified Value	A=66.4 ± 5 mVp-p

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 46, and adjust so that the amplitude (A) of the flat part of the chroma signal (red) becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

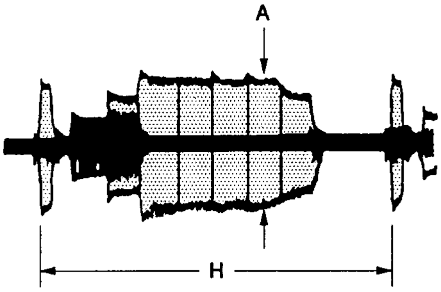


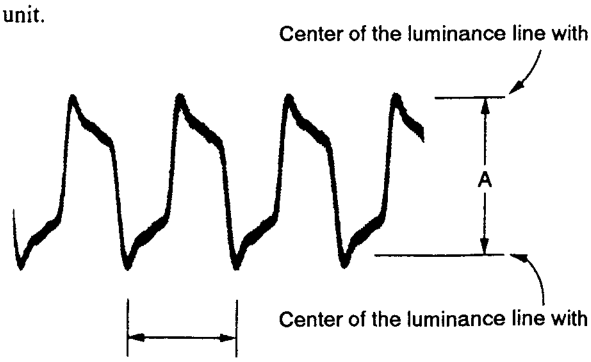
Fig. 10-24.

16. REC Y Level Adjustment (FP-484 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑦ of CN002 (REC 1a)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	52 (REC Y CONT (ME E)) 53 (REC Y CONT (MP E)) 54 (REC Y CONT (ME L)) 55 (REC Y CONT (MP L))
Specified Value	A=300 ± 5 mVp-p

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
- ME tape Hi8 mode (ME E mode) adjustment
2) Insert the ME tape, and set the record mode.
3) Check that the Hi8 switch is at "Auto".
4) Change the data of page: D, address: 52, and adjust so that REC Y level (A) becomes the specified value.
5) Press the PAUSE button of the adjusting remote control unit.
- Hi8 MP tape Hi8 mode (MP E mode) adjustment
6) Insert the Hi8 MP tape, and set the record mode.
7) Check that the Hi8 switch is at "Auto".
8) Change the data of page: D, address: 53, and adjust so that the REC Y level (A) becomes the specified value.
9) Press the PAUSE button of the adjusting remote control unit.
- ME tape normal mode (ME L mode) adjustment
10) Turn the Hi8 switch off.
11) Insert the ME tape, and set the record mode.
12) Change the data of page: D, address: 54, and adjust so that the REC Y level (A) becomes the specified value.
13) Press the PAUSE button of the adjusting remote control unit.
14) Set the Hi8 switch to "Auto".
- MP tape normal mode (MP L mode) adjustment
15) Insert the MP tape, and set the record mode.
16) Change the data of page: D, address: 55, and adjust so that the REC Y level (A) becomes the specified value.
17) Press the PAUSE button of the adjusting remote control unit.


Center of the luminance line with
A
Center of the luminance line with

Hi8 (E) mode: Approx. 0.17 µsec
Normal (L) mode: Approx. 0.23 µsec

Fig. 10-25.

17. REC L CONT Adjustment (FP-484 board)

Mode	Record (SP)
Signal	Color bar
Measurement Point	Pin ⑦ of CN002 (REC 1a)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5C (REC L CONT (ME E SP)) 5D (REC L CONT (MP E SP)) 5E (REC L CONT (ME L SP)) 5F (REC L CONT (MP L SP)) 60 (REC L CONT (ME E LP)) 61 (REC L CONT (MP E LP)) 62 (REC L CONT (ME L LP)) 63 (REC L CONT (MP L LP))
Specified Value	ME tape Hi8 mode (ME E) A=57 ± 2 mVp-p Hi8 MP tape Hi8 mode (MP E) A=38 ± 2 mVp-p ME tape normal mode (ME L) A=57 ± 2 mVp-p MP tape normal mode (MP L) A=48 ± 2 mVp-p

Note: Check that the REC MODE switch is at "SP".

Connection

1) Remove the AU-151 board CN603.
2) Connect the contact point of R178 and R176 of the VS-101 board (near pin ㊳ of IC153) to the GND with a 0.01 μF capacitor (1-101-004-00).

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) After memorizing each data of address: 52 to address: 55 of page: D, set data: 00 to each address.
   (Minimizing the REC Y RF level)

- ME tape Hi8 mode (ME E mode) adjustment

3) Insert the ME tape, and set the record mode.
4) Check that the Hi8 switch is at "Auto".
5) Change the data of page: D, address: 5C, and adjust so that REC C RF level (A) becomes the specified value.
6) Press the PAUSE button of the adjusting remote control unit.

- Hi8 MP tape Hi8 mode (MP E mode) adjustment

7) Insert the Hi8 MP tape, and set the record mode.
8) Check that the Hi8 switch is at "Auto".
9) Change the data of page: D, address: 5D, and adjust so that the REC C RF level (A) becomes the specified value.
10) Press the PAUSE button of the adjusting remote control unit.

- ME tape normal mode (ME L mode) adjustment

11) Turn the Hi8 switch off.
12) Insert the ME tape, and set the record mode.
13) Change the data of page: D, address: 5E, and adjust so that the REC C RF level (A) becomes the specified value.
14) Press the PAUSE button of the adjusting remote control unit.
15) Set the Hi8 switch to "Auto".

- MP tape normal mode (MP L mode) adjustment

16) Insert the MP tape, and set the record mode.
17) Change the data of page: D, address: 5F, and adjust so that the REC C RF level (A) becomes the specified value.
18) Press the PAUSE button of the adjusting remote control unit.
19) Set data to address: 60, 61, 62, 63 of page: D as shown in the following table.
    (Be sure to press the PAUSE button of the adjusting remote control unit after setting each data.)

Address	Data
60	Same data as address: 5C
61	Same data as address: 5D
62	Same data as address: 5E
63	Same data as address: 5F

- Processing after adjustments

20) Set the data memorized at step 2) to each address from address: 52 to address: 55 of page: D. and press the PAUSE button of the adjusting remote control unit.

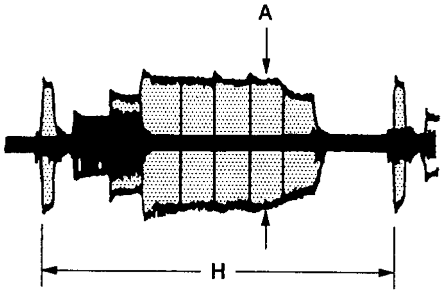


Fig. 10-26.

18. REC C Preset Adjustment (FP-484 board)

Mode	Record (SP)
Signal	Color bar
Measurement Point	CH1 (1:1 probe) CH1a: Pin ⑦ of CN002 CH2a: Pin ⑧ of CN002 CH1b: Pin ⑤ of CN002 CH2b: Pin ⑥ of CN002 CH2 (10: 1 probe) Video input/output terminal
Measuring Instrument	Oscilloscope TRIGGER SOURCE: CH2
Adjustment Page	D
Adjustment Address	30 (REC C 1A (ME)), 31 (REC C 1A (MP)), 32 (REC C 1B (ME)), 33 (REC C 1B (MP)), 34 (REC C 2A (ME)), 35 (REC C 2A (MP)), 36 (REC C 2B (ME)), 37 (REC C 2B (MP))
Specified Value	A=57 ± 2 mVp-p

Note 1: Use a ME type tape, and check that the "Hi8" switch is at "Auto".
2: Check that the REC MODE switch is at "SP".

Connection:
1) Remove the AU-151 board CN603.
2) Connect the contact point of R178 and R176 of the VS-101 board (near pin (85) of IC153) to GND with a 0.01 μF capacitor (1-101-004-00).

Adjusting method:
1) Release the protect.
   Page: 1, address: 00, data: 01
2) After memorizing the data of page: D, address: 52, set data: 00. (Minimizing the REC Y RF level)
3) Connect CH1 probe of the oscilloscope to pin ⑦ of CN002 (REC 1a).
4) Change the data of page: D, address: 30, and adjust so that the CH1a REC C level (A) becomes the specified value.
5) Press the PAUSE button of the adjusting remote control unit.
6) Adjust each REC C LEVEL of CH2a (address: 34), CH1b (address: 32) and CH2b (address: 36) in the same way.
7) Set data to address: 31, 33, 35, 37 of page: D as shown in the following table. (Be sure to press the PAUSE button of the adjusting remote control unit after setting each data.)

Address	Data
31	Same data as address: 30
33	Same data as address: 32
35	Same data as address: 34
37	Same data as address: 36

8) Set the data memorized at step 2) to page: D, address: 52, and press the PAUSE button of the adjusting remote control unit.

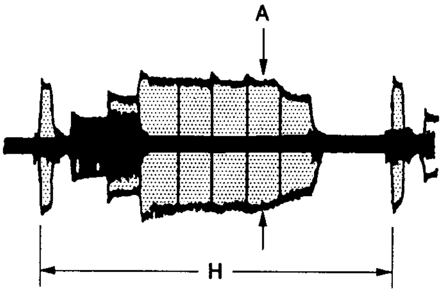


Fig. 10-27.

19. REC ATF Level Check (FP-484 board)

Mode	Record (SP)
Signal	No signal
Measurement Point	CH1a: (CN002 ⑦), CH2a: (CN002 ⑧), CH1b: (CN002 ⑤), CH2b: (CN002 ⑥)
Measuring Instrument	Oscilloscope
Specified Value	A=15.0 ± 2.0 mVp-p

Note 1: Use a MP type tape, and check that the "Hi8" switch is at "Auto".

2: Check that the REC MODE switch is at "SP".

Connection:

1) Remove the AU-151 board CN603.

Checking method:

1) Release the protect.
   Page: 1, address: 00, data: 01.
2) After memorizing the data of page: D, address: 55, set data: 00. (Minimizing the REC Y RF level)
3) Check that the REC ATF signal level (A) satisfies the specified value for each channel from CH1a to CH2a.
4) Set the data memorized at step 2) to page: D, address: 55, and press the PAUSE button of the adjusting remote control unit.

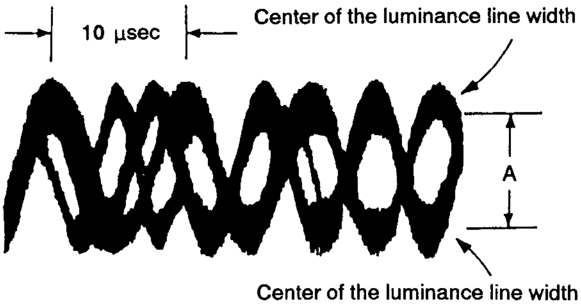

10 µsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 10-28.

20. Chroma Flicker Check and Adjustment (VS-101 board)

Mode	Self recording/playback (LP)
Signal	Color bar
Measurement Point	CH-1 (1: 1 probe): Pin ㊷ of IC501 of VS-101 board (PBC RF IN) CH-2 (10: 1 probe): Pin ⑩ of CN002 of FP-484 board ($\overline{\text{1/2 RF SWP}}$)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment address	30 (REC C 1A (ME)), 31 (REC C 1A (MP)), 32 (REC C 1B (ME)), 33 (REC C 1B (MP)), 34 (REC C 2A (ME)), 35 (REC C 2A (MP)), 36 (REC C 2B (ME)), 37 (REC C 2B (MP))
Specified Value	$\frac{Vc1a}{Vc1b} \times 100 = 100^{+18}_{-16}$ (%) $\frac{Vc2a}{Vc2b} \times 100 = 100^{+18}_{-16}$ (%)

Note 1: Check that "REC C Preset Adjustment", and "REC ATF Level Check" have been completed.

2: Use a ME type tape and check that the "Hi8" switch is at "Auto".

Checking method:

1) Record the color bar signal.
2) Playback the recorded section.
3) Name each playback level of channels 1a, 1b, 2a, 2b to Vc1a, Vc1b, Vc2a, Vc2b respectively.
4) Check that the specified values have been satisfied. If not, perform the following adjustments.

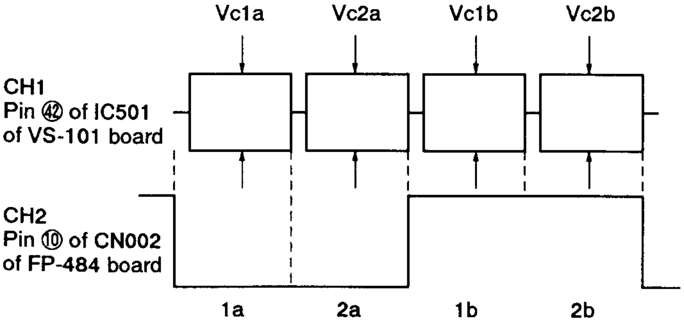


Fig. 10-29.

Adjusting method:

1) If the specifications are not satisfied, calculate the following values from the measuring values.

$\Delta Vc1 = |Vc1a - Vc1b|/2$

$\Delta Vc2 = |Vc2a - Vc2b|/2$

Note: | | is the absolute value.

2) The smaller value when the playback levels are Vc1a, Vc1b is

$$\left\{\frac{\text{(The smaller value of Vc1a and Vc1b)} + \Delta Vc1}{\text{(The smaller value of Vc1a and Vc1b)}}\right\} \times 57 \text{ (mVp-p)}$$

The greater value when the playback values are Vc1a, Vc1b is

$$\left\{\frac{\text{(The greater value of Vc1a and Vc1b)} - \Delta Vc1}{\text{(The greater value of Vc1a and Vc1b)}}\right\} \times 57 \text{ (mVp-p)}$$

The smaller value when the playback levels are Vc2a, Vc2b is

$$\left\{\frac{\text{(The smaller value of Vc2a and Vc2b)} + \Delta Vc2}{\text{(The smaller value of Vc2a and Vc2b)}}\right\} \times 57 \text{ (mVp-p)}$$

The greater value when the playback values are Vc2a, Vc2b is

$$\left\{\frac{\text{(The greater value of Vc2a and Vc2b)} - \Delta Vc2}{\text{(The greater value of Vc2a and Vc2b)}}\right\} \times 57 \text{ (mVp-p)}$$

3) Perform [REC C Preset Adjustment] with the value calculated from Vc1a, Vc1b, Vc2a, Vc2b at step 2), as the specified value for 1a, 1b, 2a, and 2b.
4) After the adjustment, perform "Chroma Flicker Check" again, and repeat the adjustment until the specified value is satisfied.

21. REC AFM Level Check (FP-484 board)

Mode	Record (SP)
Signal	No signal
Measurement Point	CH1a: (CN002 ⑦), CH2a: (CN002 ⑧), CH1b: (CN002 ⑤), CH2b: (CN002 ⑥)
Measuring Instrument	Oscilloscope
Specified Value	A=12.0 ± 2.5 mVp-p

Note 1: Use a MP type tape, and check that the "Hi8" switch is at "Auto".

2: Do not insert anything into the audio input terminal (right). (Monaural record mode)

Connection:

1) Connect the contact point of R178 and R176 of the VS-101 board (near Pin (85) of IC153) to GND with a 0.01 μF capacitor (1-101-004-00).

Checking method:

1) Release the protect.
   Page: 1, address: 00, data: 01.
2) After memorizing the data of page: D, address: 55, set data: 00. (Minimizing the REC Y RF level)
3) Check that the REC AFM signal level (A) satisfies the specified value, for each channel from CH1a to CH2a.
4) Set the data memorized at step 2) to page: D, address: 55, and press the PAUSE button of the adjusting remote control unit.

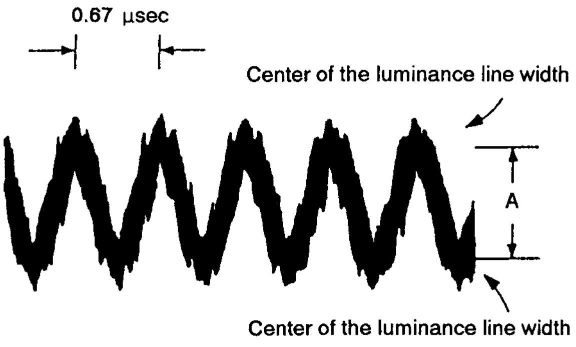

0.67 µsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 10-30.

22. YD Adjustment (VS-101 board)

Mode	Playback
Signal	Color bar tape with dropout (Note 1)
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	66 (YD ADJ)
Specified Value	Dropout section should be flat

Note 1: A tape with continuous dropout is made by scratching the magnetic section of a color bar tape which is running with the tip of a precision driver.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 66, and flatten the dropout section.
3) Press the PAUSE button of the adjusting remote control unit.

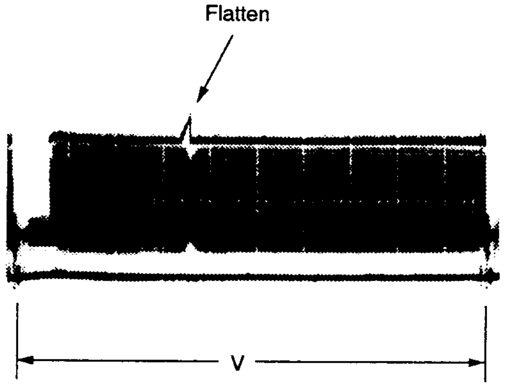


Fig. 10-31.

10-6. INDEX MARKER SYSTEM ADJUSTMENT

1. Playback VCO Free Oscillation Frequency Adjustment (VS-101 board)

Mode	Playback
Signal	Arbitrary tape
Measurement Point	Pin ⑧ of IC261
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	7F (INDEX VCO)
Specified Value	11.27 ± 0.05 MHz

Note: Connect the frequency counter via a high impedance and low capacity buffer amplifier (oscilloscope, etc.).

Connection:

1) Connect Pins ① and ⑥ of IC261 with a jumper wire.
2) Connect the Q264 collector and GND with a jumper wire.

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 7F, and adjust the oscillation frequency to the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

2. REC PCM Level Check (VS-101 board)

Mode	Record
Signal	Arbitrary
Measurement Point	Pin ② of IC001
Measuring Instrument	Oscilloscope
Specified Value	A=250 ± 100 mVp-p

Checking method:

1) Check that the REC ATF level (A) satisfies the specified value.

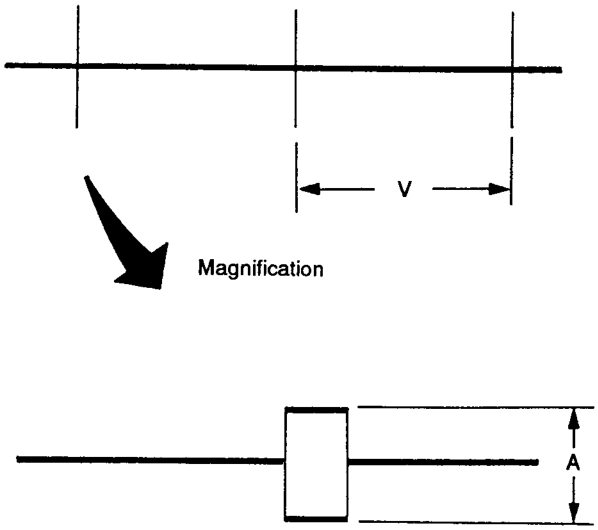


Fig. 10-32.

10-7. AUDIO SYSTEM ADJUSTMENT

- Perform the adjustment using the color bar signal as a video signal input.
- Unless specified otherwise, use a Hi8 ME tape.

[Connecting the measuring instruments for the audio]

Connect the audio system measuring instruments in addition to the video system measuring instruments as shown in Fig. 10-33, and perform adjustments at the power switch [player] position. When inputting signal, connect Pin ⑦ (JACK OUT/$\overline{\text{IN}}$) of JACK ASSY and GND with a jumper wire during Recording mode. Setting REC mode is described in section 10-1-5.

Set the Hi-Fi switch (CF-4 board S201) to the following position unless specified otherwise.

- Green (stereo) position

Note: 1) When inputting the audio signal, input the same signal to both L, and R channels, unless specified otherwise.

2) Be sure to insert the plug (shorting plug or dummy plug, etc.) into the audio input/output terminal (right). If the plug is not inserted, the unit will be set into the monaural mode, and correct adjustments cannot be carried out.
(Monaural mode)
During recording ·· REC AFM RF1.7 MHz carrier will not be output.
During playback ·· The L+R signal will be output from the audio input/output terminal (left).

3) The items to be adjusted for the R channel will be indicated within the [ ], in regard to the adjusting items to be adjusted for both L and R channels.

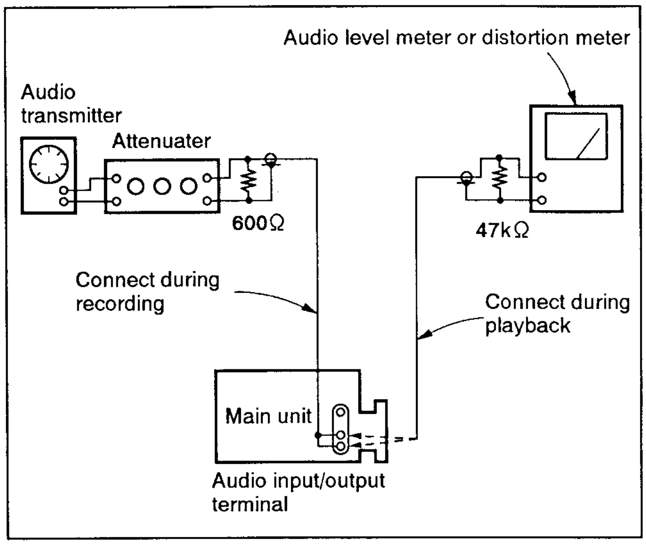


Fig. 10-33.

[Adjustment Procedure]

1) 1.5 MHz record level check
2) E-E output level check
3) REC matrix L–R adjustment
4) REC matrix L+R check
5) 1.5 MHz deviation adjustment
6) 1.7 MHz deviation adjustment
7) Overall level characteristics, distortion check
8) Separation check
9) Overall noise level check

1. 1.5 MHz Record Level Check (AU-151 board)

Mode	Record (Monaural)
Signal	No signal
Measurement Point	Pin ② of CN603 (REC AFM)
Measuring Instrument	Oscilloscope
Specified Value	A=16 ± 2 mVp-p

Note: Do not insert the plug into the audio input terminal (right).

Checking method:

1) Check that the 1.5 MHz carrier level satisfies the specified value.
   (Read the center of the luminance line width and note down the level read.)

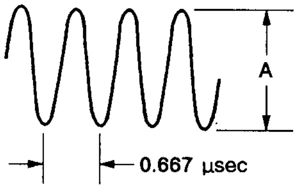


Fig. 10-34.

2. E-E Output Level Check (AU-151 board)

Mode	Record
Signal	400 Hz, -7.5 dBs audio input terminal left [right]
Measurement Point	Pin ㊾ of IC601 [Pin ㊿ of IC601]
Measuring Instrument	Oscilloscope
Specified Value	925^{+240}_{-190} mVp-p (-7.5 ± 2 dBs)

Checking method:

1) Check that the 400 Hz signal level satisfies the specified value.

3. REC Matrix L-R Adjustment (AU-151 board)

Mode	Record
Signal	400 Hz, -7.5 dBs Input to both left and right terminals of the audio input terminal
Measurement Point	Pin ⑤ of IC601
Measuring Instrument	Oscilloscope (Use 1:1 probe)
Adjustment Page	D
Adjustment Address	78 (REC/PB MX (REC))
Specified Value	0 ± 20 mVp-p

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 78, and minimize the 400 Hz signal level.
3) Press the PAUSE button of the adjusting remote control unit.

4. REC Matrix L+R Check (AU-151 board)

Mode	Record
Signal	1. 400 Hz, -7.5 dBs: Audio input terminal left No signal: Audio input terminal right 2. No signal: Audio input terminal left 400 Hz, -7.5 dBs: Audio input terminal right
Measurement Point	Pin ㊹ of IC601
Measuring Instrument	Oscilloscope
Specified Value	The level difference is 0 ± 40 mVp-p when only the left terminal is input and when only the right terminal is input.

Note: When measuring the signal level of pin ㊹ of IC601, wait for more than 1 minute after signal input before measuring. (To stabilize the AGC)

Adjusting method:

1) Input the 400 Hz, -7.5 dBs signal only to the audio input terminal (left). (Insert the shorting plug to the audio input terminal (right).)
2) Read the 400 Hz signal level of pin ㊹ of IC601, and take it down. (Approximately 400 mVp-p)
3) Input the 400 Hz, -7.5 dBs signal only to the audio input terminal (right). (Insert the shorting plug to the audio input terminal (left).)
4) Check that the 400 Hz signal level of pin ㊹ of IC601 is (the value that was taken down at step 2) ± 40 mVp-p.

5. 1.5 MHz Deviation Adjustment

Mode	Playback
Signal	Alignment tape: For checking the operation (WR5-5CSP)
Measurement Point	Audio output terminal left or right
Measuring Instrument	Oscilloscope, Level meter
Adjustment Page	D
Adjustment Address	7B (1.5 DEV)
Specified Value	–7.5 ± 0.5 dBs

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Change the data of page: D, address: 7B, and adjust so that the 400 Hz signal level becomes the specified value.
3) Press the PAUSE button of the adjusting remote control unit.

6. 1.7 MHz Deviation Adjustment (AU-151 board)

Mode	Playback
Signal	Alignment tape: AFM stereo For checking operations (WR5-9CS) Bilingual (Monoscope) section
Measurement Point	1. Pin ㊾ of IC601 2. Pin ㊿ of IC601
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	7D (1.7 DEV)
Specified Value	8 ± 0.05 graduation

Adjusting method:

1) Release the protect.
   Page: 1, address: 00, data: 01
2) Connect the oscilloscope to pin ㊾ of IC601.
3) Adjust the 400 Hz signal amplitude to the 8.0 graduation using the VOLT/DIV knob of the oscilloscope.
4) Connect the oscilloscope to pin ㊿ of IC601.
5) Change the data of page: D, address: 7D, and adjust so that the 1 kHz signal level becomes 8 ± 0.05 graduation. (Adjust with the center of the luminance line width.)
6) Press the PAUSE button of the adjusting remote control unit.

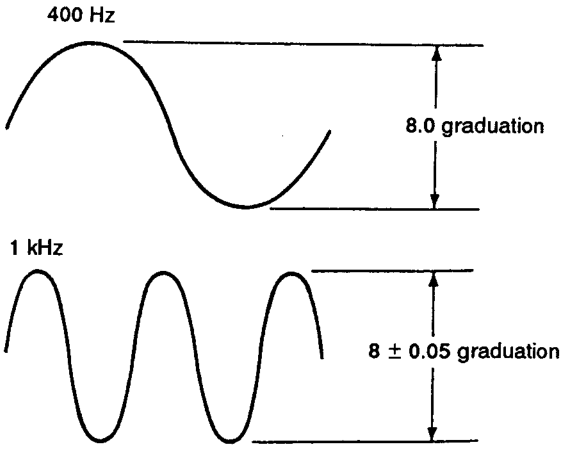


Fig. 10-35.

7. Overall Level Characteristics, Distortion Check

Mode	Self recording/playback
Signal	400 Hz, –7.5 dBs: Audio input terminal (left) [right] No signal: Audio input terminal (right) [left]
Measurement Point	Audio output terminal (left) [right]
Measuring Instrument	Audio level meter and distortion meter
Specified Value	Level: –7.5 ± 2 dBs Distortion rate: Below 0.8% (Note 2)

Note: 1) The [ ] indicates the measuring point during the right channel check.
2) Value when the 200 kHz to 6 kHz band-path filter is used

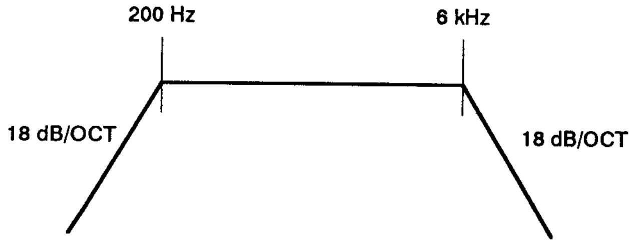


Fig. 10-36.

Checking method:

1) Input the 400 Hz, –7.5 dBs signal only to the audio input terminal (left) [right].
   Note: Be sure to insert the shorting plug to the terminal that was not signal input.
2) Record the signal.
3) Remove the input signal.
4) Playback the recorded section.
5) Check that the 400 Hz signal level of the audio output terminal (left) [right] is –7.5 ± 2 dBs, and that the distortion rate is below 0.8% (Note 2).

8. Separation Check

Mode	Self recording /playback
Signal	No signal: Audio input terminal (left) [right] 400 Hz, –7.5 dBs: Audio input terminal (right) [left]
Measurement Point	Audio output terminal (left) [right]
Measuring Instrument	Audio level meter (Use an IHF-A curve auditory correction filter)
Specified Value	Below –27.5 dBs

Note: The [ ] indicates the measuring point during the right channel check.

Checking method:

1) Insert a shorting plug into the audio input terminal (left) [right], and input a 1kHz, –7.5 dBs signal only to the audio input terminal (right) [left].
2) Record the signal.
3) Remove the input signal.
4) Playback the recorded section.
5) Check that the cross talk level (1 kHz) of the audio output terminal (left) [right] is below –27.5 dBs.

9. Overall Noise Level Check

Mode	Self recording
Signal	No signal: Audio input terminal left and right
Measurement Point	Audio output terminal (left) [right]
Measuring Instrument	Audio level meter (Use an IHF-A curve auditory correction filter)
Specified Value	Below –62.5 dBs

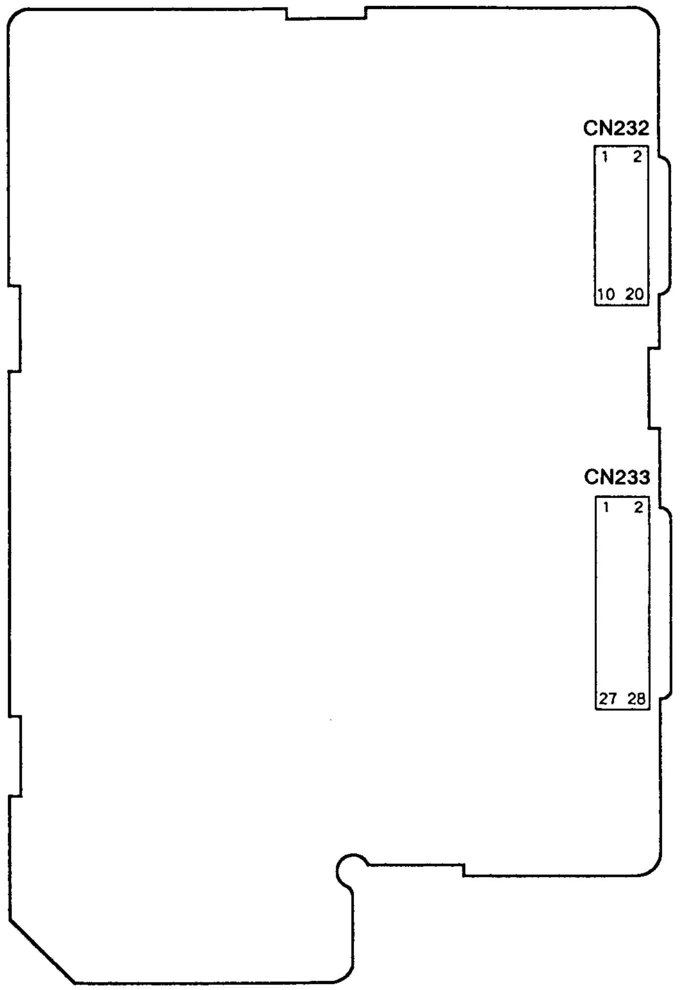
Note: The [ ] indicates the measuring point during the right channel check.

Checking method:

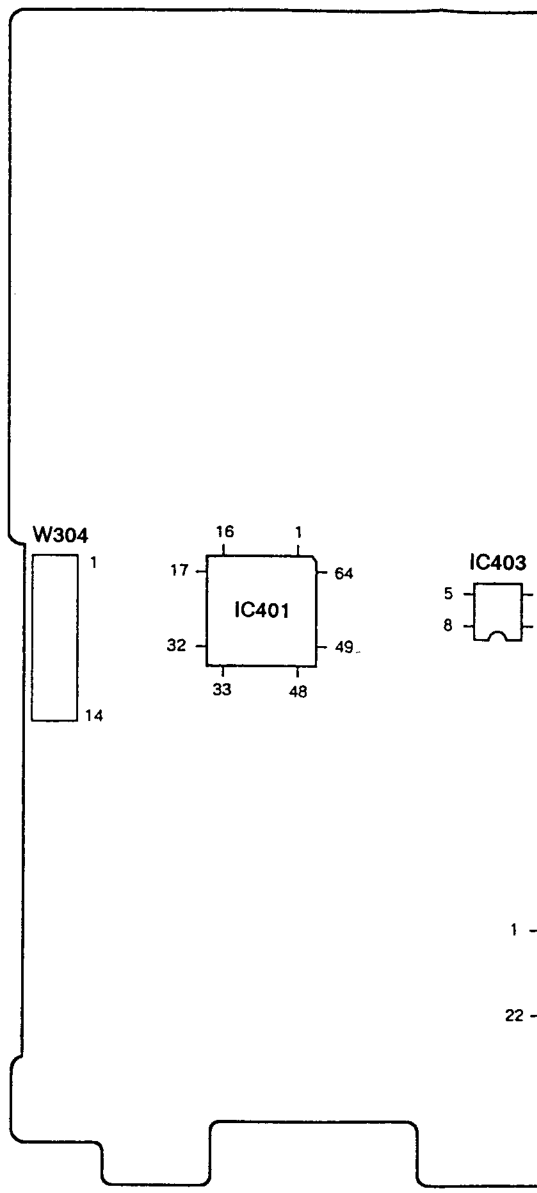
1) Insert the shorting plug to both left and right of the audio input terminals.
2) Record.
3) Remove the shorting plug.
4) Playback the recorded section.
5) Check that the noise level of the audio output terminal (left) [right] is below –62.5 dBs.

10-8. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

DD-58 BOARD (CONDUCTOR SIDE)

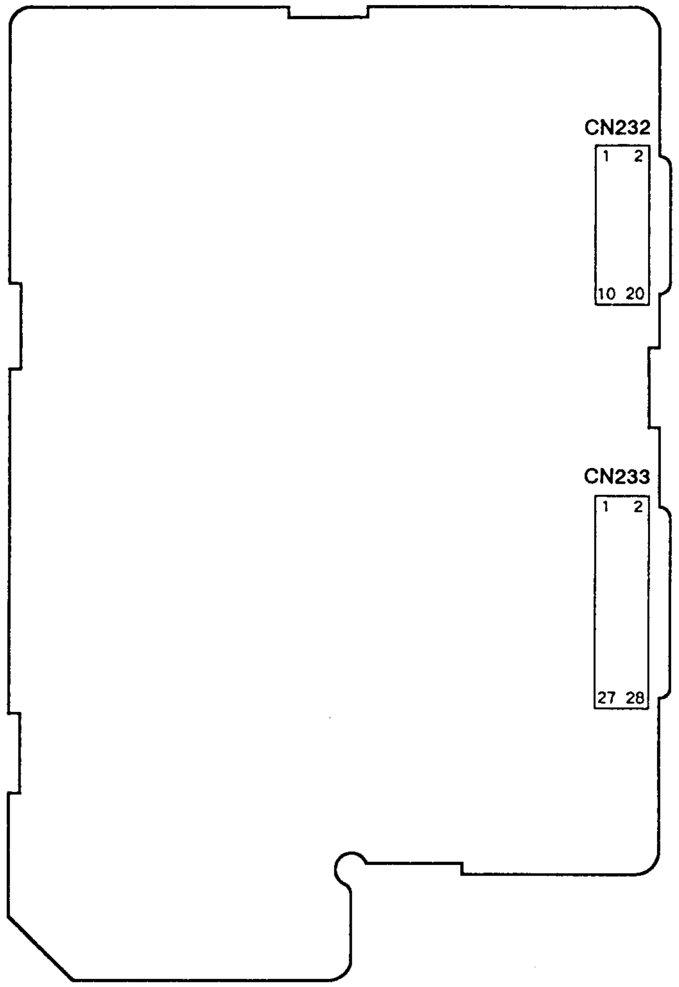

CN232
1 2
10 20
CN233
1 2
27 28

VS-101 BOARD (COMPONENT SIDE)

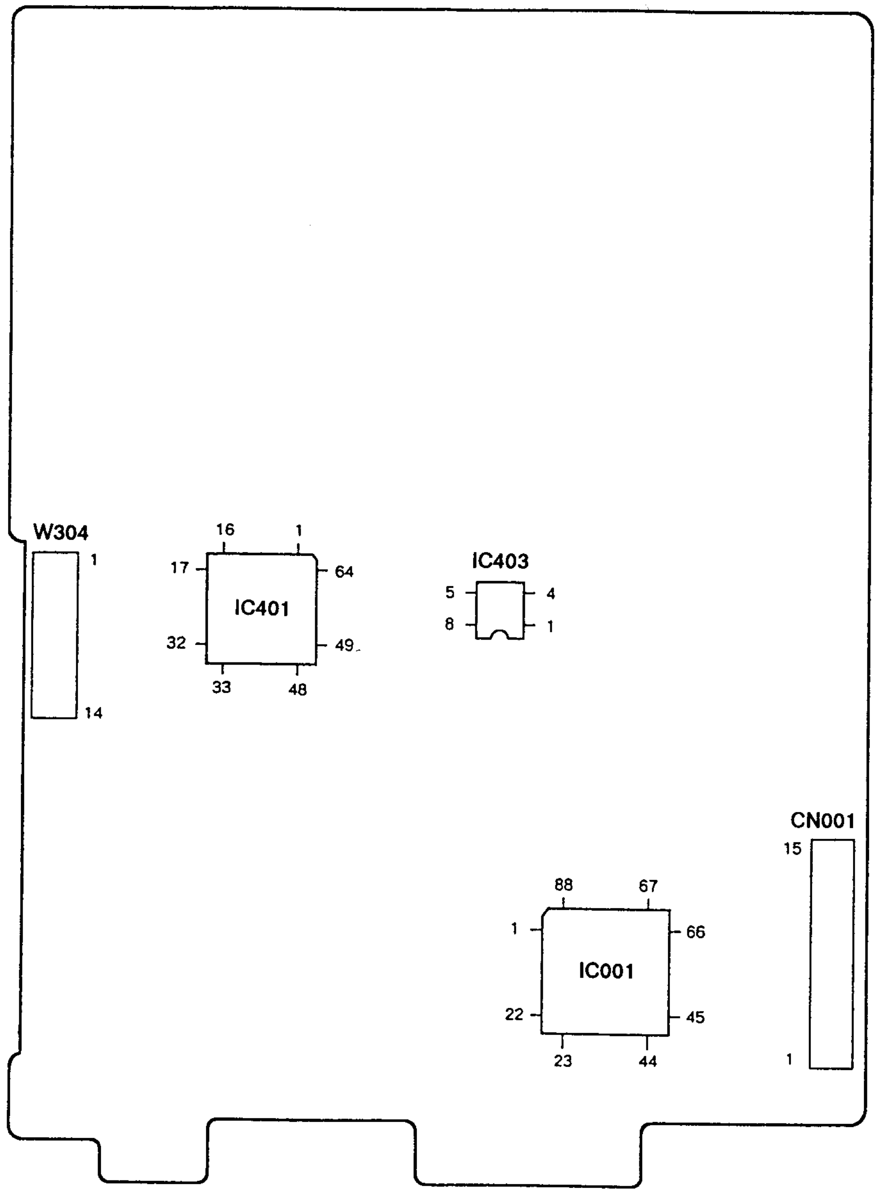

W304
1
14
16
1
17
64
IC401
32
49
33
48
IC403
5
8
1
22

10-8. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

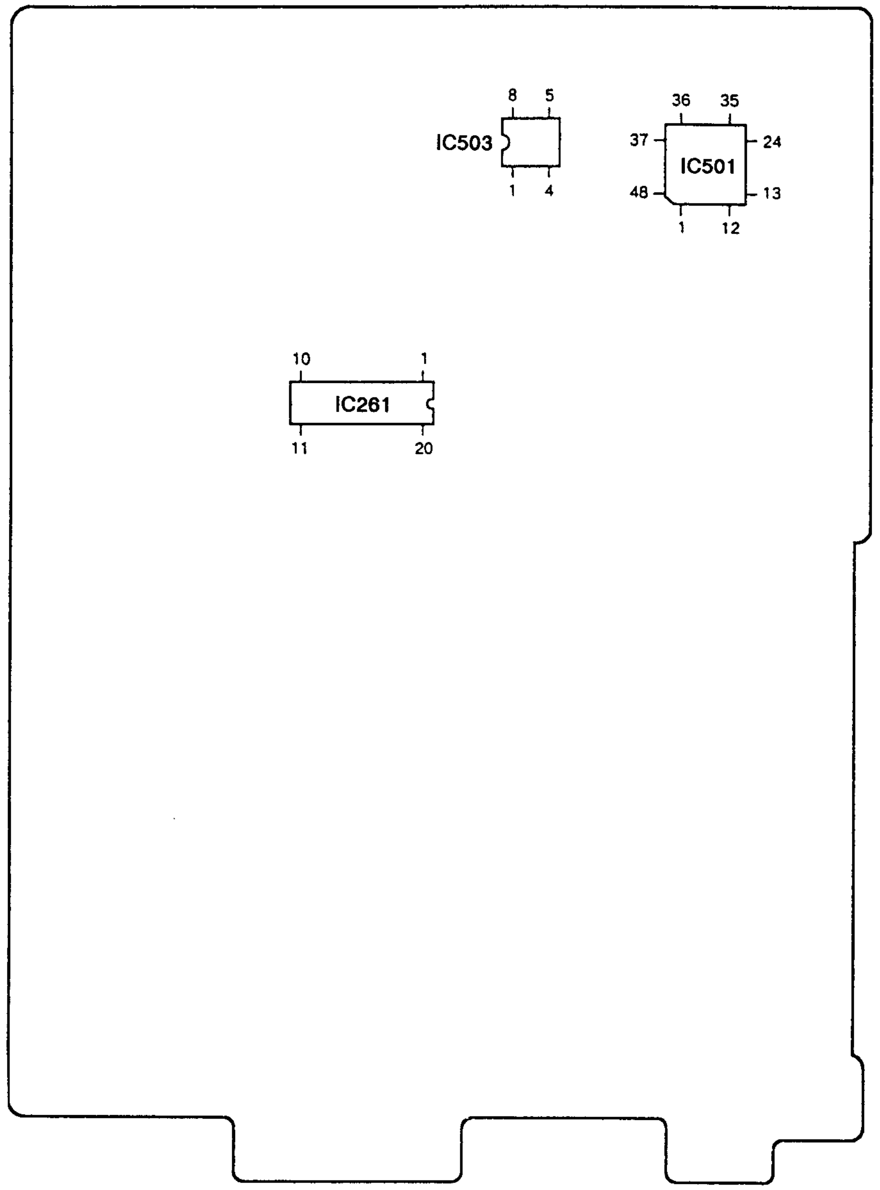
DD-58 BOARD (CONDUCTOR SIDE)


CN232
1 2
10 20
CN233
1 2
27 28

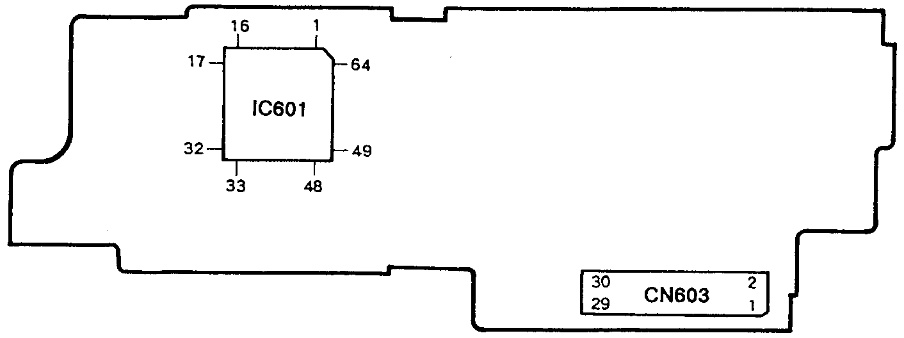
VS-101 BOARD (COMPONENT SIDE)


W304
1
14
IC401
16
1
17
64
32
49
33
48
IC403
5
4
8
1
CN001
15
1
IC001
88
67
1
66
22
45
23
44

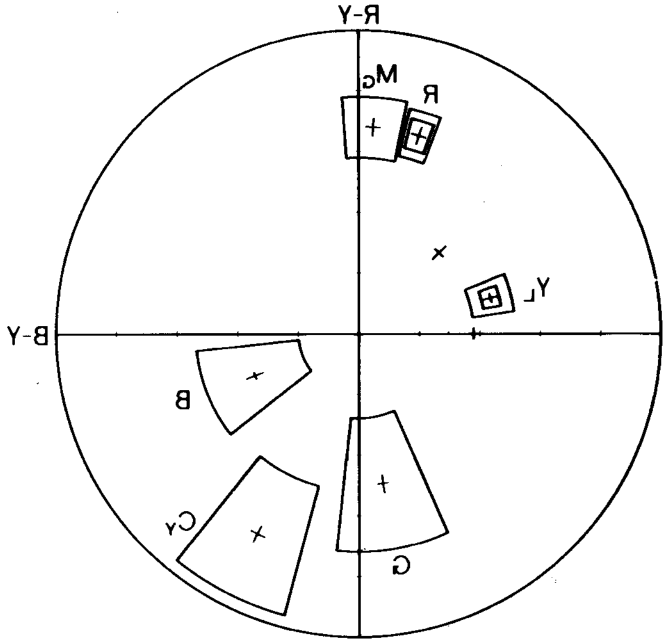
VS-101 BOARD (CONDUCTOR SIDE)


IC503
8 5
1 4
IC501
36 35
37
24
48
13
1 12
IC261
10 1
11 20

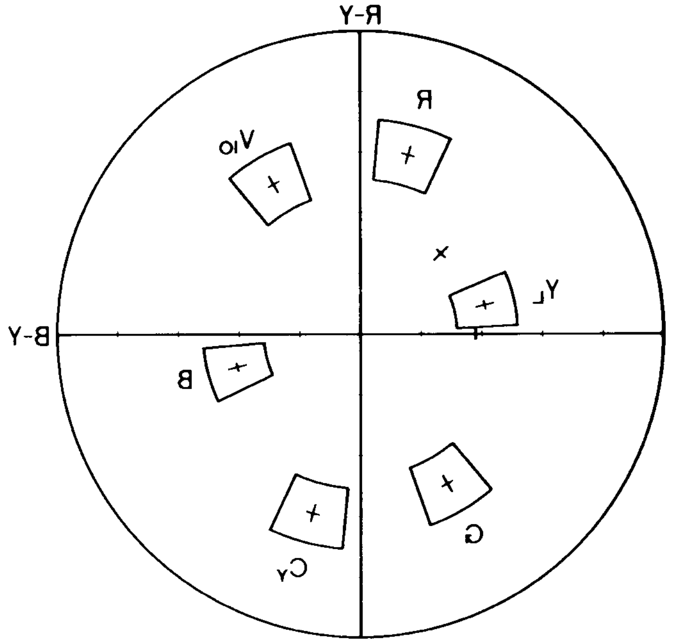
AU-151 BOARD (COMPONENT SIDE)


IC601
16
1
17
64
32
49
33
48
CN603
30
29
2
1

FOR CAMERA COLOR REPRODUCTION ADJUSTMENT


R-Y
B-Y
Mg
R
YL
B
Cy
G

FOR TITLER COLOR REPRODUCTION ADJUSTMENT


R-Y
B-Y
R
Vio
YL
B
Cy
G

CCD-TR808E
RMT-508

SONY

SERVICE MANUAL

AEP Model

SUPPLEMENT-1

File this supplement with service manual.

Subject : Additional adjustment of steady-shot (VAP)

(96-026)

SECTION 8
CAMERA SECTION ADJUSTMENTS

☞: ADD

The image correction adjustment for swinging must also be carried out if the angular velocity sensor has been replaced.

Page 217

8 (2). Steady-shot (VAP) Adjustment

Subject	Chart 1, 2 for steady-shot adjustment
Measuring Point	Check the operations on the TV monitor
Measuring Instrument	
Adjustment Page	E
Adjustment Address	00 (a0 V SENSOR GAIN) 01 (a1 V SENSOR GAIN)

Perform steady-shot adjustment when angular velocity sensor has been replaced.

Note: Note down the sensitivity labeled on the angular velocity sensor (service part) together with the reference number (SE001 or SE002) of the angular velocity sensor replaced.

Adjustment method:

1) Adjust to the zoom TELE end.
2) Adjust the position of the unit so that the steady-shot adjustment chart 1 comes to the center of the monitor (top, buttom, left and right).
3) Release the protect.
   Page: 6, address: 00, data: 01
4) Set data: 07 to page: E, address: 11.
   (Check that the steady-shot adjustment chart 1 shifts upwards on the monitor TV.)
5) Input the video signal output when the data of 4) is changed from 08 to 07 into the oscilloscope and measure the amount of movement (Tv (ms)) of the black line.
6) Obtain Xv′ (decimal number) using the sensor sensitivity (S2) of the angular velocity sensor attached to the SE102 on the SE board and the amount of movement (Tv) of the black line.

$$Xv' = \frac{1.62}{Tv\,(ms)} \times \frac{2.269}{S_2} \times 151$$

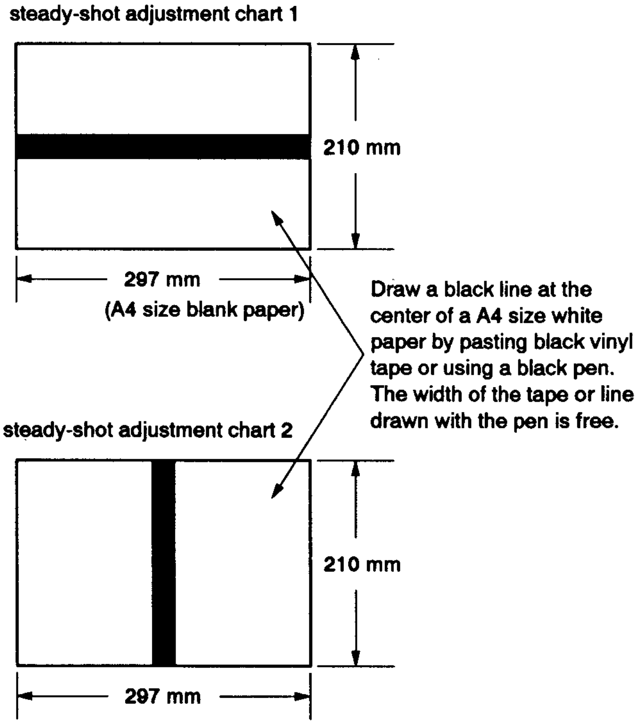
7) Convert Xv′ to a hexadecimal number and take it as Xv. (round up to a whole number)
8) Set data Xv to page: E, address: 00 and press the PAUSE button of the adjusting remote control unit.
9) Set data: 08 to page: E, address: 11.
10) The chart has been changed to "steady-shot adjustment chart 2".
11) Set data: 07 to page: E, address: 13.
    (Check that the steady-shot adjustment chart 2 shifts to the left via the center.)
12) Input the video signal output when the data of 10) is changed from 08 to 07 into the oscilloscope and measure the amount of movement (TH (µs)) of the black line.
13) Obtain XH′ (decimal number) using the sensor sensitivity (S1) of the angular velocity sensor attached to the SE101 on the SE board and the amount of movement (TH) of the black line.

$$X_H' = \frac{3.4}{T_H\,(\mu s)} \times \frac{2.265}{S_1} \times 152$$

14) Convert XH′ to hexadecimal notation and obtain XH. (Round off to one decimal place)
15) Set data XH to page: E, address: 01 and press the PAUSE button of the adjusting remote control unit.
16) Set data: 08 to page: E, address: 13.

Precessing after completing adjustments

1) Set data: 10 to page: 6, address: 00.
2) Connect the TV monitor and check that image correction, against swinging, has been carried out properly.


steady-shot adjustment chart 1
210 mm
297 mm
(A4 size blank paper)
Draw a black line at the center of a A4 size white paper by pasting black vinyl tape or using a black pen. The width of the tape or line drawn with the pen is free.
steady-shot adjustment chart 2
210 mm
297 mm

English
96F0951-1
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Published by Quality Engineering Dept.
(Osaki East)

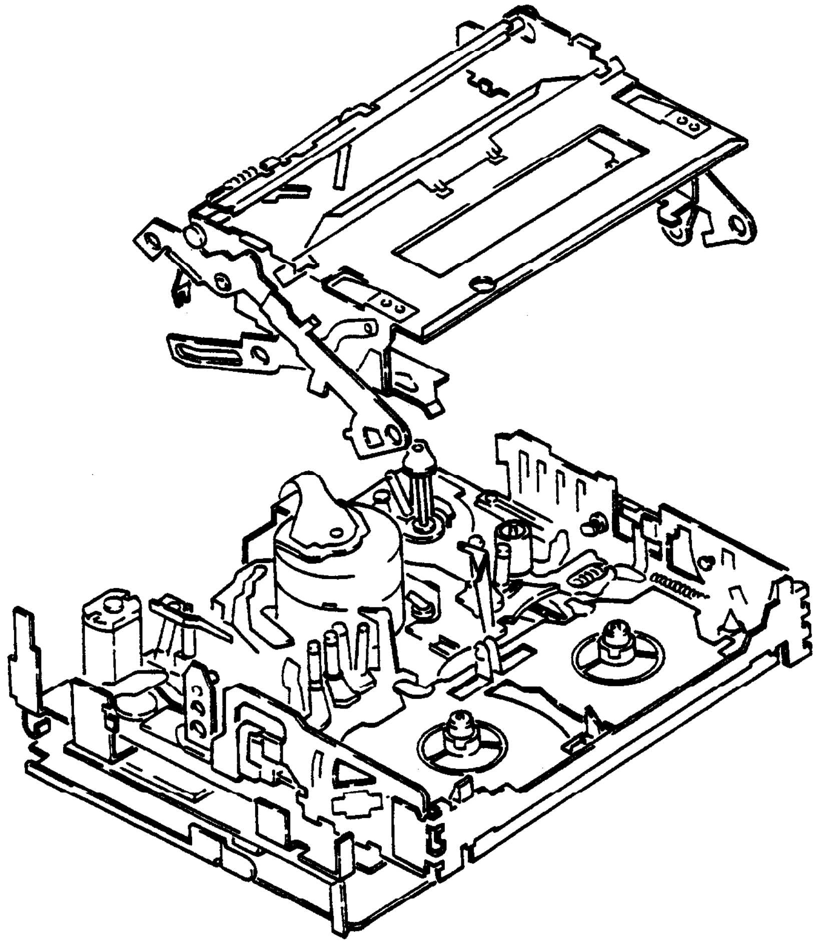
9-973-413-81

Sony Corporation
Personal A&V Products Company

8mm Video MECHANICAL ADJUSTMENT MANUAL II

FL MECHANISM (Q MECHANISM) Video 8

File with the SERVICE MANUAL



8 VIDEO RECORDER

SONY®

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1. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND MAINTENANCE

For removal of the cabinet and boards, refer to "Disassembly" in each Service Manual.

Mechanical adjustment is done in the USE mode. (To select the USE mode, refer to "1-4 Handling of Mode Selector".)

1-1 CASSETTE COMPARTMENT HOLDER ASSEMBLY (Fig. 1)

1. Removal

1) Select the USE mode.
2) Remove the screw ●, and then, the LS support ●.
3) Remove the four screws ●, and then, the LS frame assy ●.
4) Remove the three lock washers ●, and then, the washer ●, bar, joint ●, T protector assy ●, and TP arm assy ● in that order.
5) Remove the two screws●, and then, the two arm shafts A●.
6) Remove the shaft through the long hole●. With the cassette compartment holder assembly●rotated in a direction of the arrow Ⓐ, remove the long holes●and●from the shaft in that order, and then, remove the cassette compartment holder assembly●.
7) Slide the BS holder●in a direction of the arrow Ⓑ as shown in Fig. A and remove it in a direction of the arrow Ⓒ.

Note : When this is done, be careful not to drop the steel ball and spring, compression out of the BS holder ●.

2. Mounting

1) Select the USE mode.
2) Mount the BS holder●in the reverse order of its removal. Note: Refer to Fig. A.
3) Mount the shafts in the order of the long holes ●, ●and● of the cassette compartment holder assembly●, respectively.

Note : When this is done. rotate the cassette compartment holder assembly●in a direction of the arrow Ⓐ to mount it until the long hole is aligned with the oval shape of the shaft.

4) Align the oval shape of the two arm shafts A●with the long holes of the LS chassis, fit them in firmly and fix with the two screws●.
5) Mount the TP arm assy ●, T protector assy ● and bar, joint ●, respectively. Then, mount the washer ● and three lock washers ●.
6) Mount the LS frame assy ● to the chassis and fix with the four screws ●.
7) Mount the LS support ● to the chassis and fix with the screw ●.

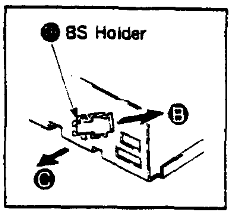


Fig. A

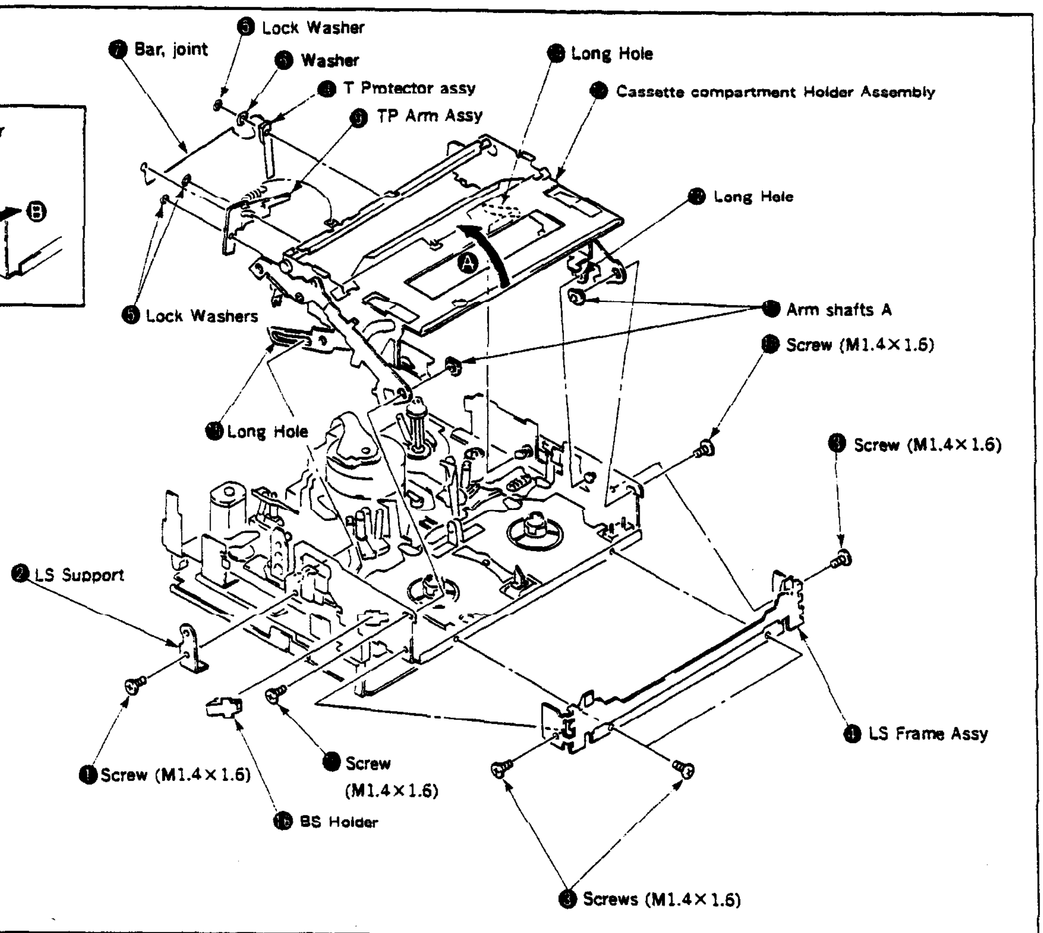

● Lock Washer
● Bar, joint
● Washer
● T Protector assy
● TP Arm Assy
● Long Hole
● Cassette compartment Holder Assembly
● Long Hole
Ⓐ
● Lock Washers
● Arm shafts A
● Screw (M1.4×1.6)
● Long Hole
● Screw (M1.4×1.6)
● LS Support
● LS Frame Assy
● Screw (M1.4×1.6)
● Screw (M1.4×1.6)
● BS Holder
● Screws (M1.4×1.6)

Fig. 1

1-2 CASSETTE COMPARTMENT LOCK HEIGHT ADJUSTMENT (Fig. 2)

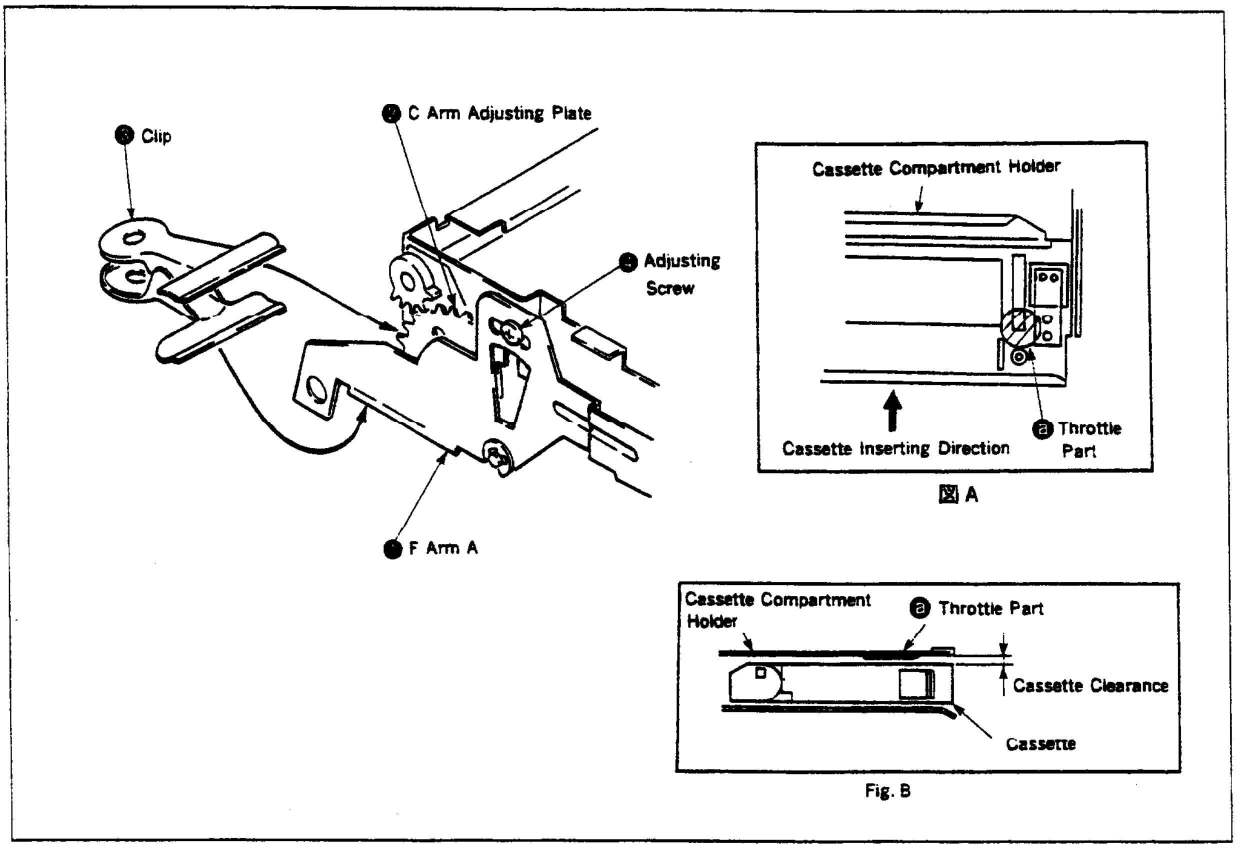
1) Using a spacer, etc., insert a 15.3mm-thick cassette to lock the cassette compartment.

Note : As shown in Fig. A, a 15.3mm-thick portion may be under the throttle partⓐ.

2) Pressing the partⓐ, nip the F arm A ⓑ and the first tooth of the C arm adjusting plate ⓒ with the clip ⓓ, and tighten the adjusting screw ⓔ at a torque of 1kg•cm.

3) Apply Screw Lock to the adjusting screw ⓔ after making sure of the following clearances between the throttle partⓐ of the cassette compartment holder and the cassette as shown in Fig. B.

- For 15mm-thick dummy cassette : 0.5 – 0.9
- For 15.2mm-thick dummy cassette : 0.3 – 0.7


ⓓ Clip
ⓒ C Arm Adjusting Plate
ⓔ Adjusting Screw
ⓑ F Arm A
Cassette Compartment Holder
Cassette Inserting Direction
ⓐ Throttle Part
Cassette Compartment Holder
ⓐ Throttle Part
Cassette Clearance
Cassette

図A

Fig. B

Fig. 2

1-3 OPERATION WITH CASSETTE COMPARTMENT HOLDER ASSEMBLY REMOVED

1. Putting into Loading state (Fig. 3)

1) Referring to the Service Manual, supply power with the cabinet and camera section removed. (Make the mechanism deck ready to operate.)
2) Place the cap ● on the LED assembly ●.
3) Press the pin of the push switch ● (ON state) and fix it with adhesive tape ● in that state.
4) Press the locking plate release arm ● in an arrow direction. The set is made ready for loading.

2. Putting into the REC Mode

1) Short the TEST pins (SS-82 board CN404 pins ● and ● for CCD-V11/V88) to place into the TEST mode.

For CCD-V11/V88 ; SS-82 board CN404
TEST pin connector

4	GND
3	$\overline{\text{CAM ADJ}}$
2	$\overline{\text{TEST}}$
1	$\overline{\text{PATH}}$

The set is placed into the TEST mode by shorting the pins ● and ●.

2) After completing the step 1), set the power switch to VTR (or CAMERA).
3) Turn on the REC switch. (If the set is placed in the TEST mode, detection of S and T reel table rotation is disabled and the tape can run.)

3. Putting into EJECT

1) Turn on the EJECT switch.

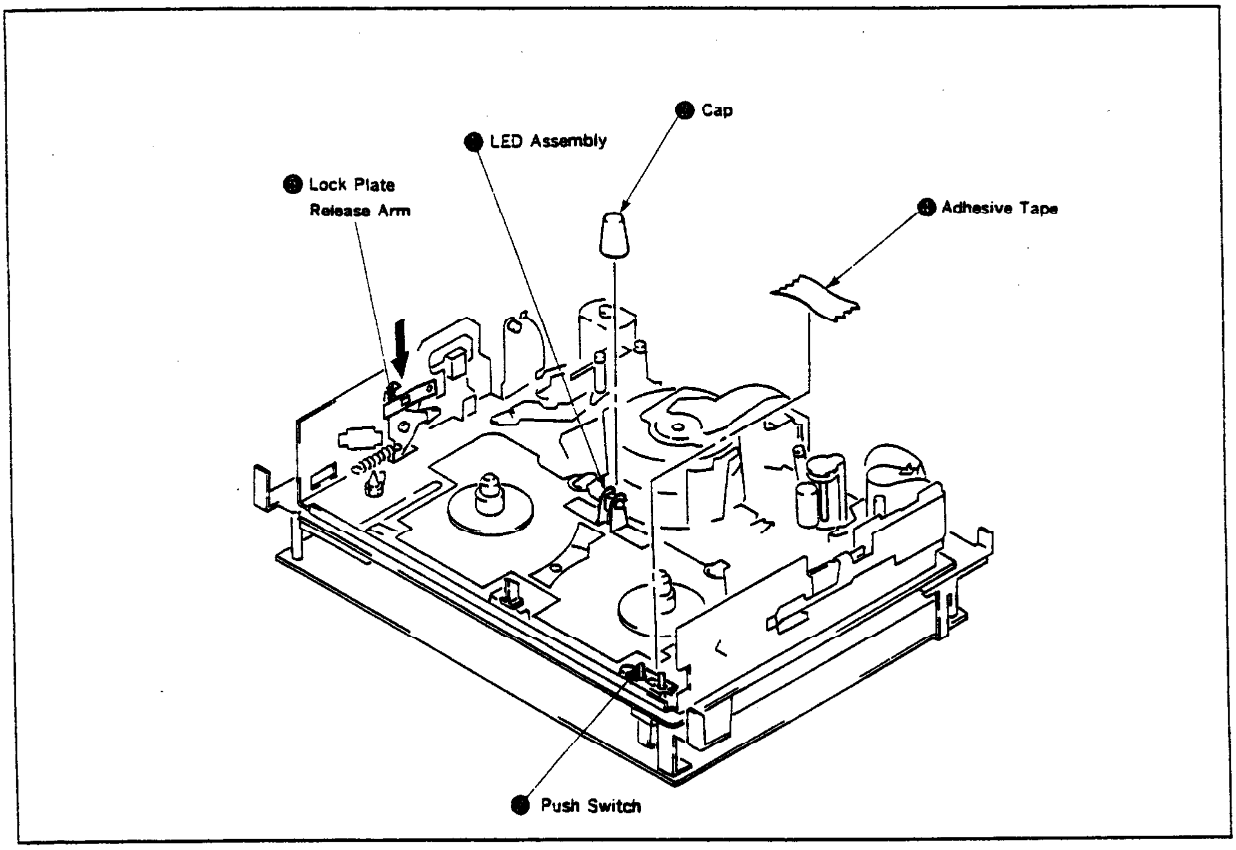


Fig. 3

1-4 HANDLING OF MODE SELECTOR

- Mount the MODE SELECTOR III panel to the mode selector. U, FL, O and O' mechanisms have different mode indications respectively. Select your disired type. (Fig. 4)

1. Construction (Fig. 5)

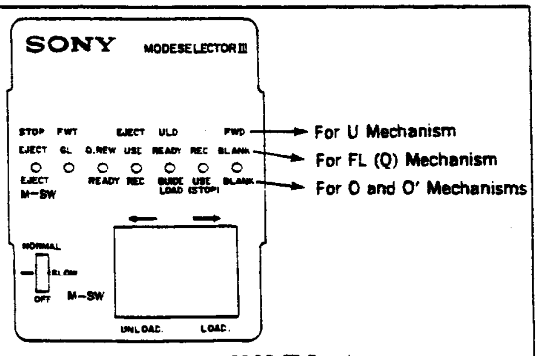
2. Connection (Fig. 6)

For CCD-VII/V88

1) Remove the plate, ornamental ●.
2) Remove the screw ●, and then, the LB-12 board ●.
3) Remove the FP-114 flexible connector ● and loading motor connector ●, and insert them into the MODE SELECTOR III conversion connector respectively.
4) Insert the M-SW connector of the mode selector into the MODE SELECTOR III conversion connector.

3. Handling

1) Use the M mode selector buttons only.
2) During mode selection, "BLANK" lights up when no mode is being selected.
3) If the right M mode selector button is kept pressed, EJECT, USE, GL, Q.REW, GL, REC and READY light up in that order.
4) When changing over from the READY mode back to the EJECT mode, press the left M mode selector button to select your desired mode.


SONY
MODESELECTOR Ⅲ
STOP
FWT
EJECT
ULD
FWD
EJECT
GL
Q.REW
USE
READY
REC
BLANK
EJECT
M-SW
READY
REC
GUIDE LOAD
USE (STOP)
BLANK
NORMAL
SLOW
OFF
M-SW
UNLOAD.
LOAD.
For U Mechanism
For FL (Q) Mechanism
For O and O' Mechanisms

Ref. No. J-13 MODE SELECTOR Ⅲ Panel

Fig. 4

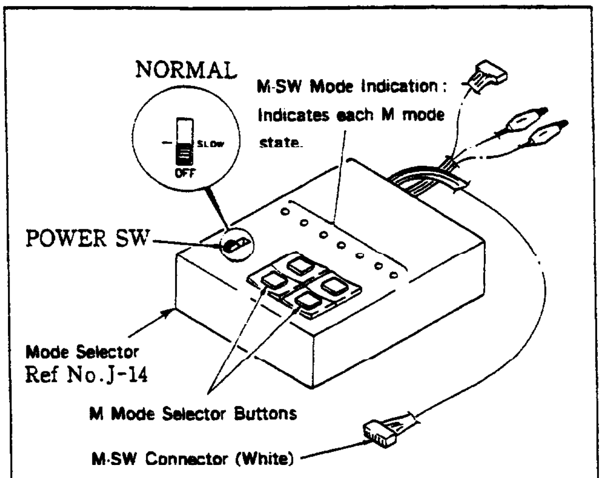

NORMAL
SLOW
OFF
M-SW Mode Indication : Indicates each M mode state.
POWER SW
Mode Selector
Ref No.J-14
M Mode Selector Buttons
M-SW Connector (White)

Fig. 5

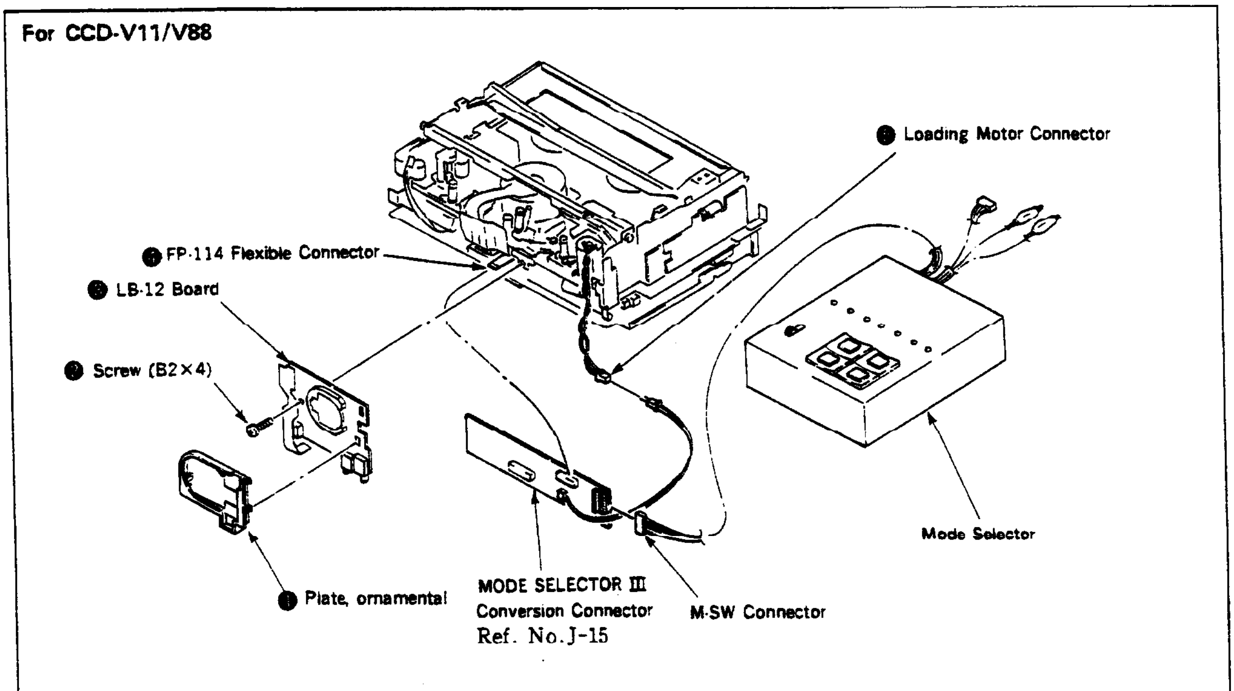
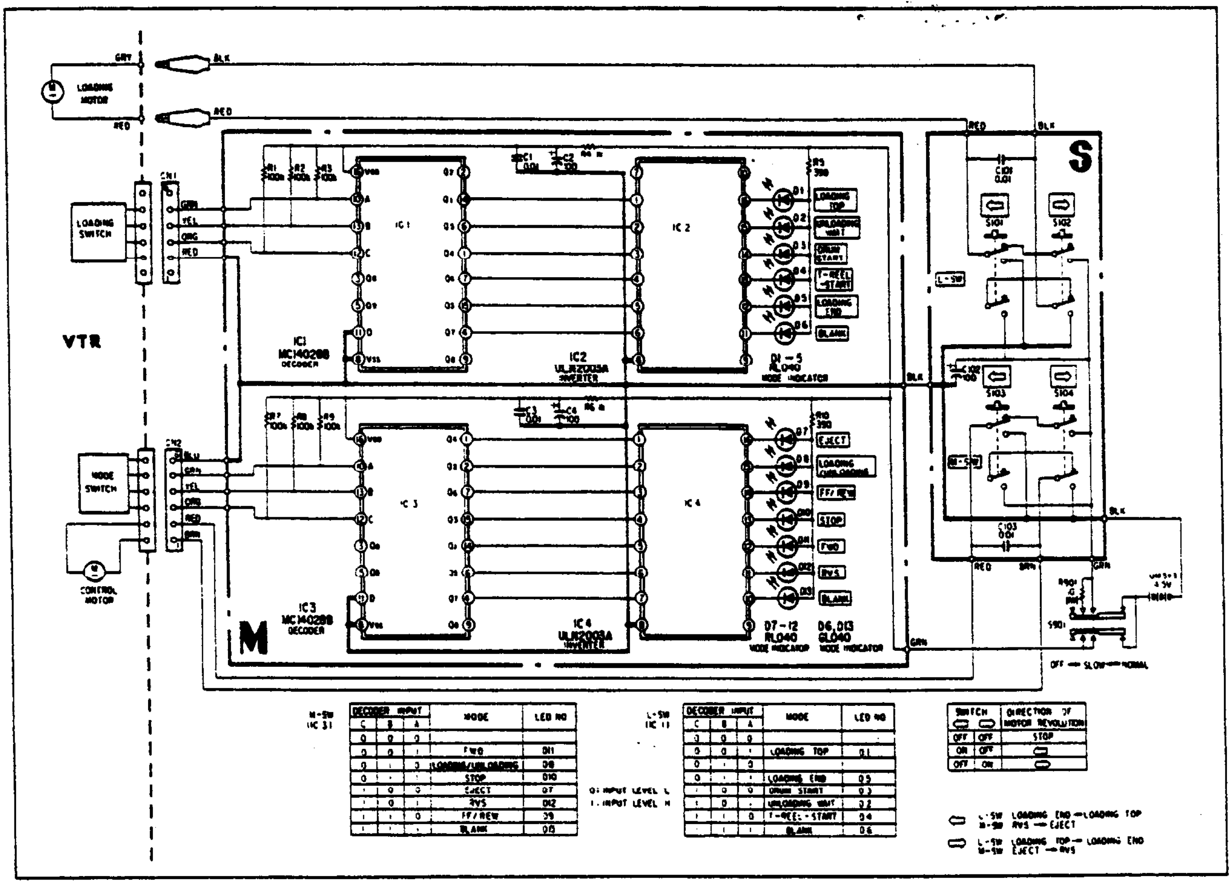

For CCD-V11/V88
● Loading Motor Connector
● FP-114 Flexible Connector
● LB-12 Board
● Screw (B2×4)
● Plate, ornamental
MODE SELECTOR Ⅲ
Conversion Connector
Ref. No.J-15
M-SW Connector
Mode Selector

Fig. 6

1-5 MODE SELECTOR SCHEMATIC DIAGRAM


LOADING MOTOR
GRY
BLK
RED
CN1
LOADING SWITCH
GRN
YEL
ORG
VTR
CN2
MODE SWITCH
BLU
CONTROL MOTOR
IC1 MC14028B DECODER
IC2 ULN2003A INVERTER
IC3 MC14028B DECODER
IC4 ULN2003A INVERTER
D1-5 RL040 MODE INDICATOR
D7-12 RL040 MODE INDICATOR
D6, D13 GL040 MODE INDICATOR
LOADING TOP
UNLOADING WAIT
DRUM START
T-REEL-START
LOADING END
BLANK
EJECT
LOADING UNLOADING
FF/REW
STOP
FWD
RVS
S
M
L-SW
M-SW
S101
S102
S103
S104
C101 0.01
C102 100
C103 0.01
R901
S901
OFF → SLOW → NORMAL
0: INPUT LEVEL L
1: INPUT LEVEL H

M-SW (IC 3)

DECODER INPUT			MODE	LED NO
C	B	A		
0	0	0		
0	0	1	FWD	D11
0	1	0	LOADING/UNLOADING	D8
0	1	1	STOP	D10
1	0	0	EJECT	D7
1	0	1	RVS	D12
1	1	0	FF/REW	D9
1	1	1	BLANK	D13

L-SW (IC 1)

DECODER INPUT			MODE	LED NO
C	B	A		
0	0	0		
0	0	1	LOADING TOP	D1
0	1	0		
0	1	1	LOADING END	D5
1	0	0	DRUM START	D3
1	0	1	UNLOADING WAIT	D2
1	1	0	T-REEL-START	D4
1	1	1	BLANK	D6

SWITCH		DIRECTION OF MOTOR REVOLUTION
⇦	⇨	
OFF	OFF	STOP
ON	OFF	⇦
OFF	ON	⇨

⇦ L-SW LOADING END → LOADING TOP
M-SW RVS → EJECT

⇨ L-SW LOADING TOP → LOADING END
M-SW EJECT → RVS

1-6 MODE SELECTOR PARTS LIST

Ref. No	Part No.	Description		
		CAPACITOR		
C1	1-108-579-00	MILER	0.01μF	50V
C2	1-123-333-00	ELECT	100μF	24V
C3	1-108-579-00	MILER	0.01μF	50V
C4	1-123-333-00	ELECT	100μF	24V
C101	1-108-579-00	MILER	0.01μF	50V
C102	1-123-333-00	ELECT	100μF	24V
C103	1-108-579-00	MILER	0.01μF	50V
		DIODE		
D1	8-719-812-31	DIODE TLR123		
D2	8-719-812-31	DIODE TLR123		
D3	8-719-812-31	DIODE TLR123		
D4	8-719-812-31	DIODE TLR123		
D5	8-719-812-31	DIODE TLR123		
D6	8-719-812-33	DIODE TLG123A		
D7	8-719-812-31	DIODE TLR123		
D8	8-719-812-31	DIODE TLR123		
D9	8-719-812-31	DIODE TLR123		
D10	8-719-812-31	DIODE TLR123		
D11	8-719-812-31	DIODE TLR123		
D12	8-719-812-31	DIODE TLR123		
D13	8-719-812-33	DIODE TLG123A		

Ref. No	Part No.	Description		
		IC		
IC1	8-752-240-28	IC TC4028BP		
IC2	8-752-120-03	IC μPA2003C		
IC3	8-759-240-28	IC TC4028BP		
IC4	8-759-120-03	IC μPA2003C		
		RESISTOR		
R1	1-247-179-00	CARBON	100K	1/4W
R2	1-247-179-00	CARBON	100K	1/4W
R3	1-247-179-00	CARBON	100K	1/4W
R4	1-247-131-00	CARBON	1K	1/4W
R5	1-247-121-00	CARBON	390	1/4W
R6	1-247-131-00	CARBON	1K	1/4W
R7	1-247-179-00	CARBON	100K	1/4W
R8	1-247-179-00	CARBON	100K	1/4W
R9	1-247-179-00	CARBON	100K	1/4W
R10	1-247-121-00	CARBON	390	1/4W
R901	1-214-594-00	METAL	10	1W

2. PERIODIC CHECK AND MAINTENANCE

- Carry out the following maintenance and periodic checks in order not only to fully exhibit the functions and performance of the set, but also for the equipment and tape. After repairing, service the set as follows, regarless of the length of use.

2-1 CLEANING OF ROTARY DRUM ASSEMBLY

1) Gently apply chamois cloth (Ref. No. J-2) soaked in cleaning liquid (Ref. No. J-1) to the rotary drum assembly.
   Clean it by rotating the upper rotary drum assembly slowly counterclockwise by hand.

Note : Do not rotate the motor by power or rotate the upper rotary drum assembly clockwise by hand. Also, the head tip is highly likely to be damaged if the chamois cloth is moved in a pependicular direction to the it. Make sure to follow the instructions above for cleaning the rotary drum assembly.

2-2 CLEANING OF TAPE PATH (Fig. 7)

1) In the EJECT mode, clean the tape running system (TG-1, -2, -3, -4, -5, -6, -7, -8, -9, -10, -11, pinch roller, and capstan shaft) and the lower drum, using a superfine applicator (Ref. No. J-3) soaked in the cleaning liquid.

Note : Note that no oil or grease of each link mechanism adheres to the superfine applicator (Ref. No. J-3).

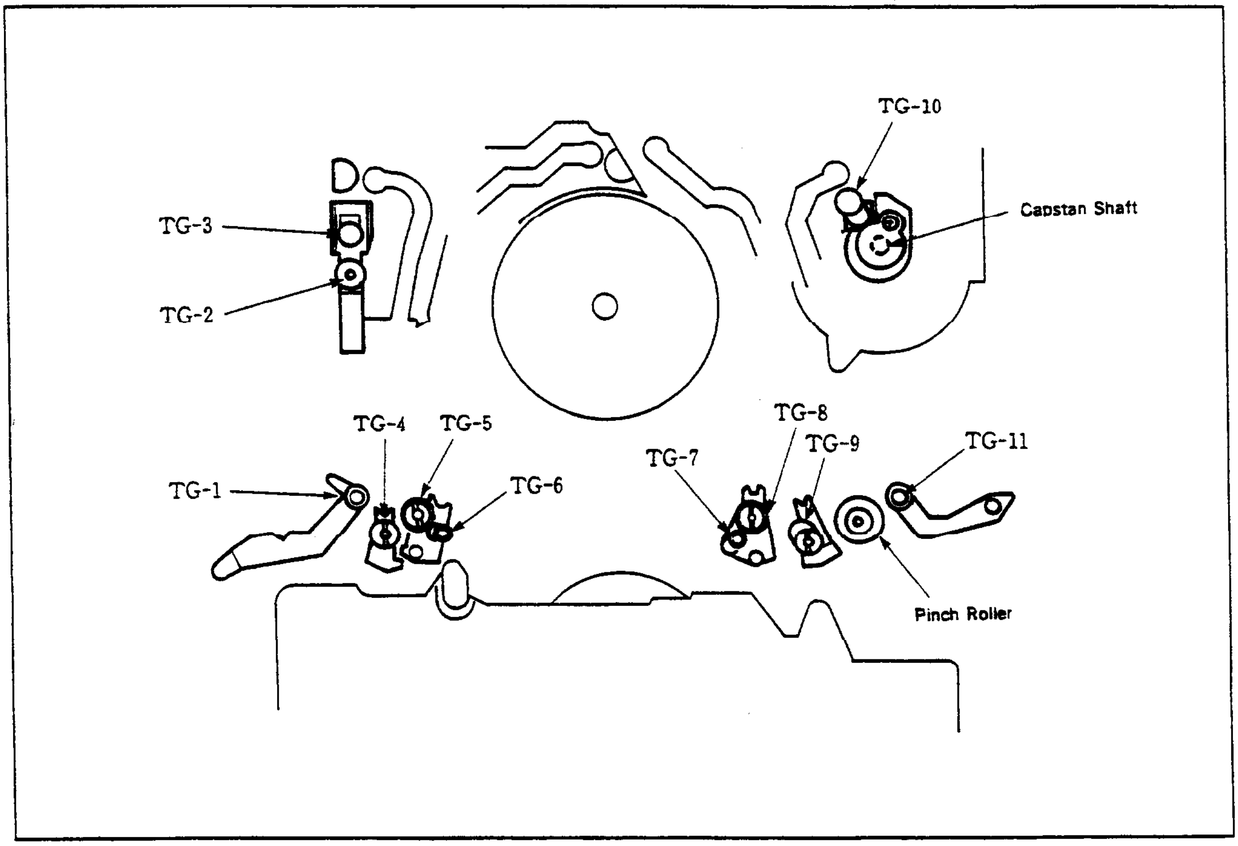


Fig. 7

2-3 PERIODIC CHECK ITEMS

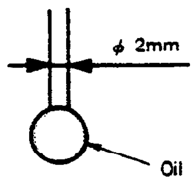
	Location of Maintenance and check	Hours of Use (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
Tape trans-portion System	Cleaning of tape path surface	○	○	○	○	○	○	○	○	○	○	Be careful of oil
	Cleaning and degaussing of rotary assembly	○	○	○	○	○	○	○	○	○	○	Be careful of oil
Driving System	Relay belt	—	☆	—	☆	—	☆	—	☆	—	☆	3-728-212-01
	Capstan shaft	—	◎	—	◎	—	◎	—	◎	—	◎	Be adsolutely careful not to get oil on the tape path surface.
	Relay pulley sheft	—	◎	—	◎	—	◎	—	◎	—	◎	
	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	1-541-607-11
Performance Confirmation	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD. RVS torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○ : Cleaning ◎ : Oil ☆ : Confirmation

Note : When overhauling, refer to the items above to replace parts.

Note : Concerning oil

- Be sure to use specified oil. (If you use oil with different visicosity, etc., it may cause troubles.)
  Oil : Part No. 7-661-018-18 (Mitsubishi Diamond Oil Hydrofluid NT-68)
- When lubricating bearings, be sure use oil free from dust, etc. (If you use oil with dust, etc. contained, it may cause bearings to be worn out or seized.)
- A drip of oil refers to an amount attached to the tip of a ϕ 2mm stick shown in the right figure.

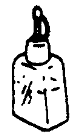


2-4 Service jigs list

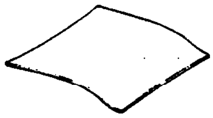
Ref. No.	Neme	Part No.	Fixture No.	Usage and Others
J-1	Cleasing fluid	Y-2031-001-0	—	
J-2	Cleasing cloth	2-034-697-00	—	
J-3	Super fine applicator (Made by NIPPON APPLICATOR, P752D)		—	
J-4	Head degausser	Widely available	—	
J-5	Small mirror for adjustment Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-6	Alignment tape NTSC (WR5-1N) PAL (WR5-1C)	8-967-995-01 8-967-995-06		Tape path
J-7	Dial tension gauge	J-6080-827-A		Various torque measurement
J-8	Tension measurement reel	J-6080-831-A		With ϕ30 tape
J-9	FWD and RVS winding torque cassette	J-6080-824-A	GD-2086	
J-10	Drum screwdriver (Hexagonal wrench screwdriver)	7-700-766-01		
J-11	Screwdriver for tape path	J-6082-026-A		For tape guide adjustment
J-12	Mode selector III panel	J-6082-023-A		
J-13	Mode selector	J-6080-825-A		For all models
J-14	Mode selector III conversion connector	J-6082-021-A		

Other equipment
- Oscilloscope
- Analog tester (20kΩ)

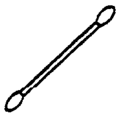
J-1



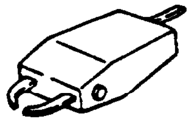
J-2



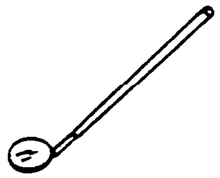
J-3



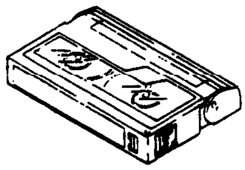
J-4



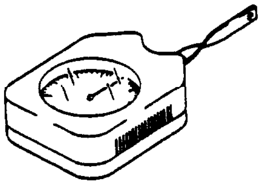
J-5



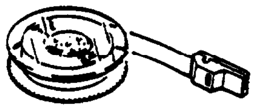
J-6



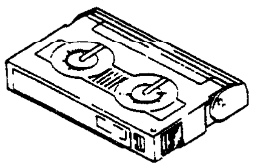
J-7



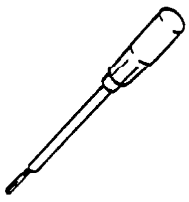
J-8



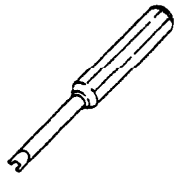
J-9



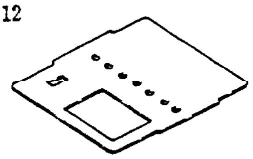
J-10



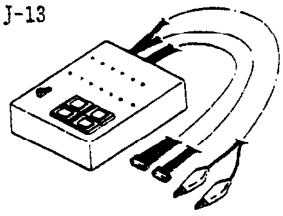
J-11



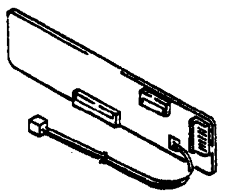
J-12



J-13



J-14



3. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

Note : Use the mode selector (Ref. No. J-14) for the following mechanical checks, adjustments and replacements.

Note : The modes in ☐ are those set by pressing the mode selector buttons.

3-1 LED BASE (Fig. 8)

1. Removal

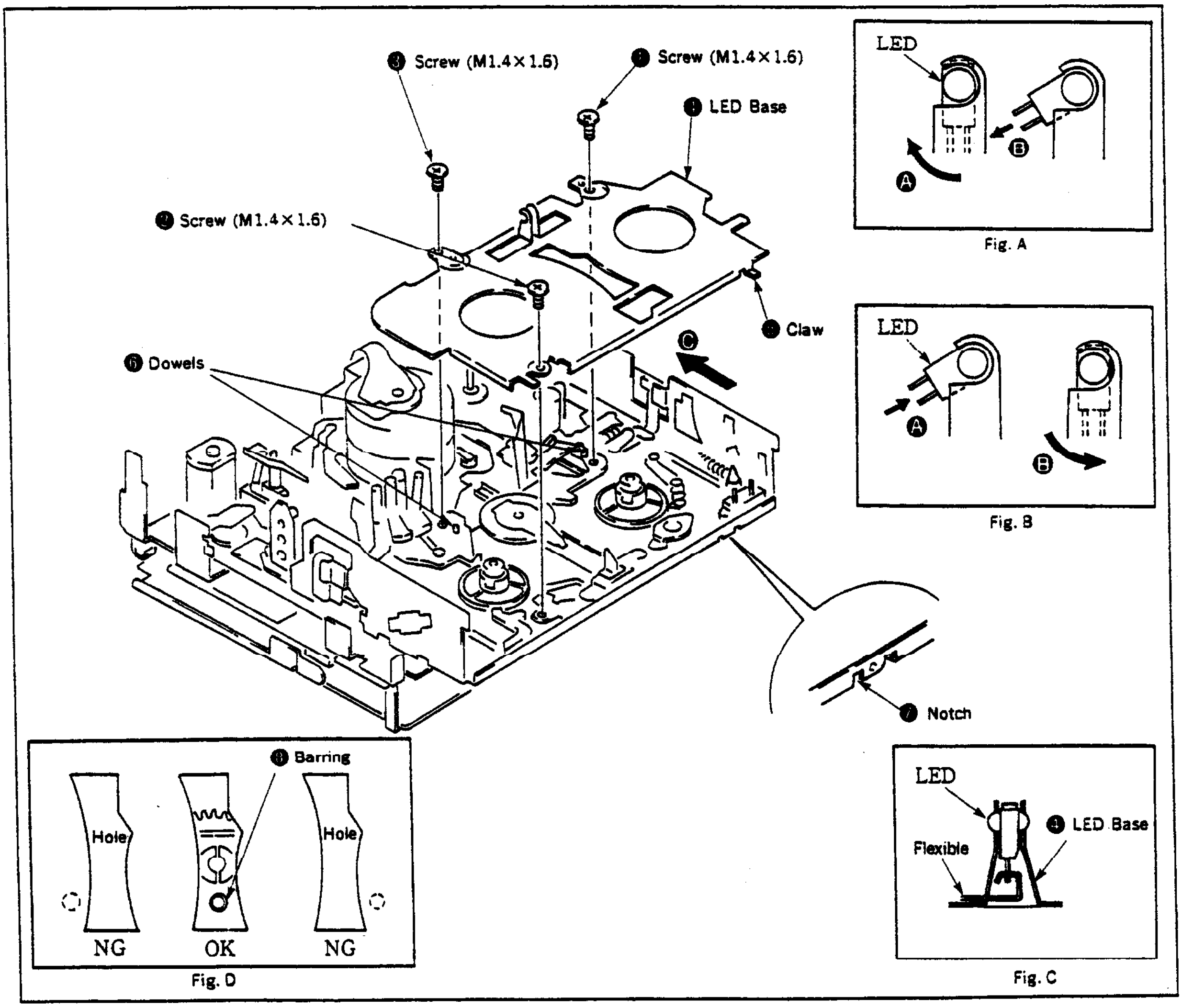
1) Select the USE mode.
2) Referring to 1-1, remove the cassette compartment holder assembly.
3) As shown in Fig. A, rotate the LED in a direction of the arrow Ⓐ and remove it in a direction of the arrow Ⓑ.
4) Remove the three screws ●, ● and ●.
5) Lifting the LED base ●, remove it by pushing it in a direction of the arrow Ⓒ.

Note : Dismount and remount the LED base carefully, because its holder is easily deformed.

2. Mounting

1) Select the USE mode.
2) Put the claw ● of the LED base ● in the notch ● of the LS chassis without catching the LED in between. Next, fit to the dowels ● at 2 places.
3) Mount and tighten the screws ●, ● and ● in that order.
4) As shown in Fig. B, set the LED in a direction of the arrow Ⓐ and rotate it in a direction of the arrow Ⓑ to fix.
5) As shown in Fig. C, bend a flexible boord and put it in the holder.

Note : In the step2), make sure that the barring ● of the arm assy, gear can appears in the hole of the LED base. (Fig. D)



③ Screw (M1.4×1.6)
● Screw (M1.4×1.6)
● LED Base
② Screw (M1.4×1.6)
● Claw
Ⓒ
⑥ Dowels
● Notch
LED
Ⓐ
Ⓑ
Fig. A
LED
Ⓐ
Ⓑ
Fig. B
LED
● LED Base
Flexible
Fig. C
● Barring
Hole
Hole
NG
OK
NG
Fig. D

Fig. 8

3-2 RL BASE ASSEMBLY, RETAINER (Fig. 9)

1. Removal

1) Select the [USE] mode.
2) Referring to 1-1, remove the cassette compartment holder assemlby.
3) Referring to 3-1, remove the LED base.
4) Remove the screw ●, and then, retainer ●.
5) Remove the screw ●, and then, RL base assembly ●.

2. Mounting

1) Select the [USE] mode.
2) With the screw ●, mount the RL base assembly ● to the LS chassis.
3) With the screw ● fix the retainer ● to the RL base assembly ●.
   When this is done, align the bump part ⁎ of the retainer ● with the bump part ⁎ of the guide rail T. (Fig. A)
4) Referring to 3-1, mount the LED base.
5) Referring to 1-1, mount the cassette compartment holder assembly.

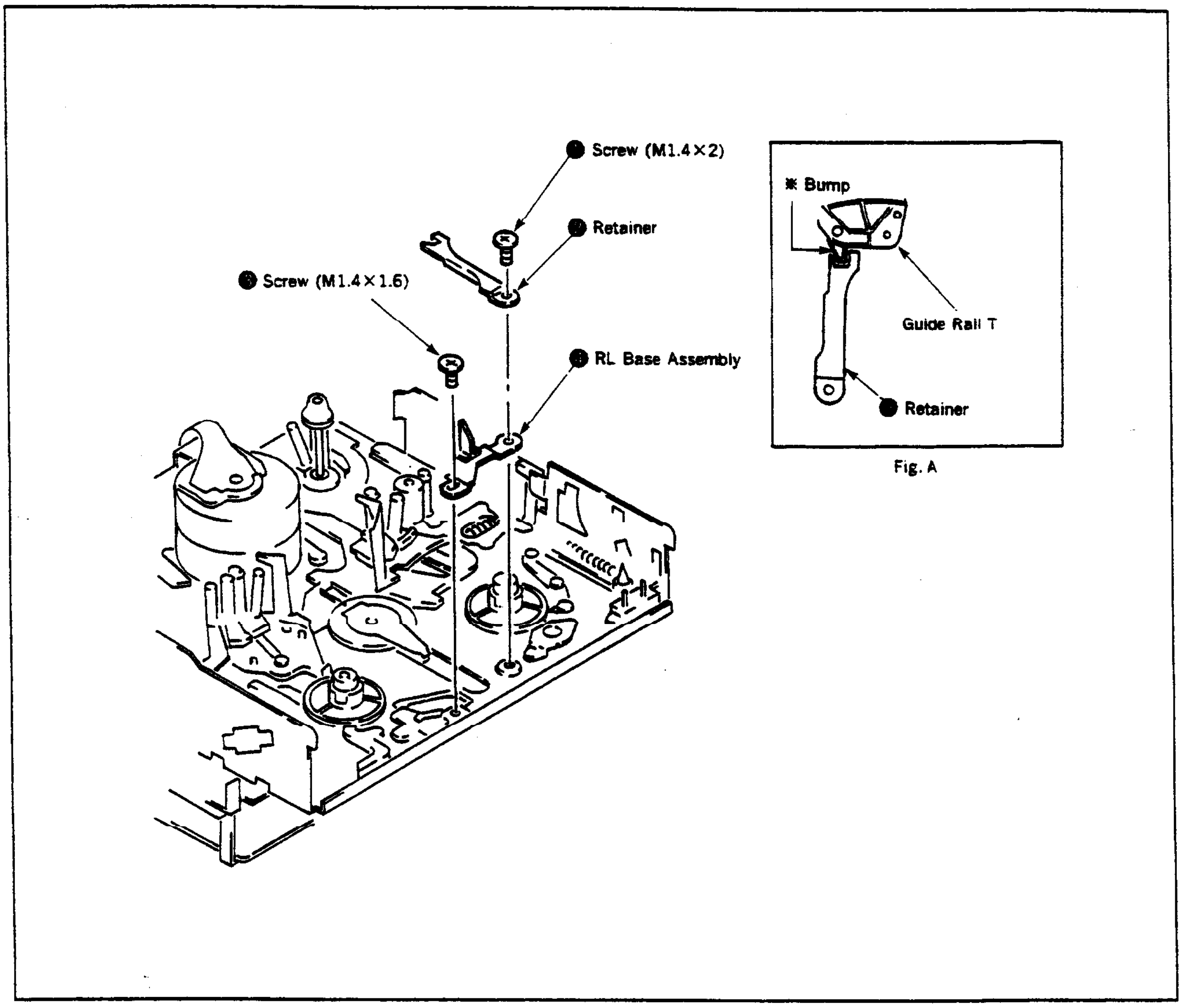

● Screw (M1.4×2)
● Retainer
● Screw (M1.4×1.6)
● RL Base Assembly
⁎ Bump
Guide Rail T
● Retainer
Fig. A

Fig. 9

3-3 TABLE ASSY, REEL, SUPPLY (Fig. 10)

1. Removal

1) Select the USE mode.
2) Referring to 1-1, remove the cassette compartment holder assembly.
3) Referring to 3-1, remove the LED base.
4) As shown in Fig. A, making use of slackness of the tension regulator string ● in the USE mode, remove the string out of the groove of the table assy, reel, supply ●. When this is done, be careful not to bend the tension regulator string ● and the S soft arm ● must be moved in a direction of the arrow Ⓑ.
5) Remove the table assy, reel, supply ●.

Note : Dismount and remount the table assy, reel, supply ●, holding the reel claw ⋇.

2. Mounting

1) Select the USE mode.
2) As shown in Fig. B, move the S soft arm ● in a direction of the arrow Ⓑ.
3) Avoiding the tension regulator string ●, mount the table assy, reel, supply ● to the shaft ●.
4) Put the tension regulator string ● in the groove of the table assy, reel, supply ● and fit it properly by turning the table assy, reel, supply ●.
5) Referring to 3-1, mount the LED base.
6) Referring to 1-1, mount the cassette compartment holder assembly.

Note : Do not touch the tension regulator string ● with naked hand. Also, be careful of adhesion of grease, etc.

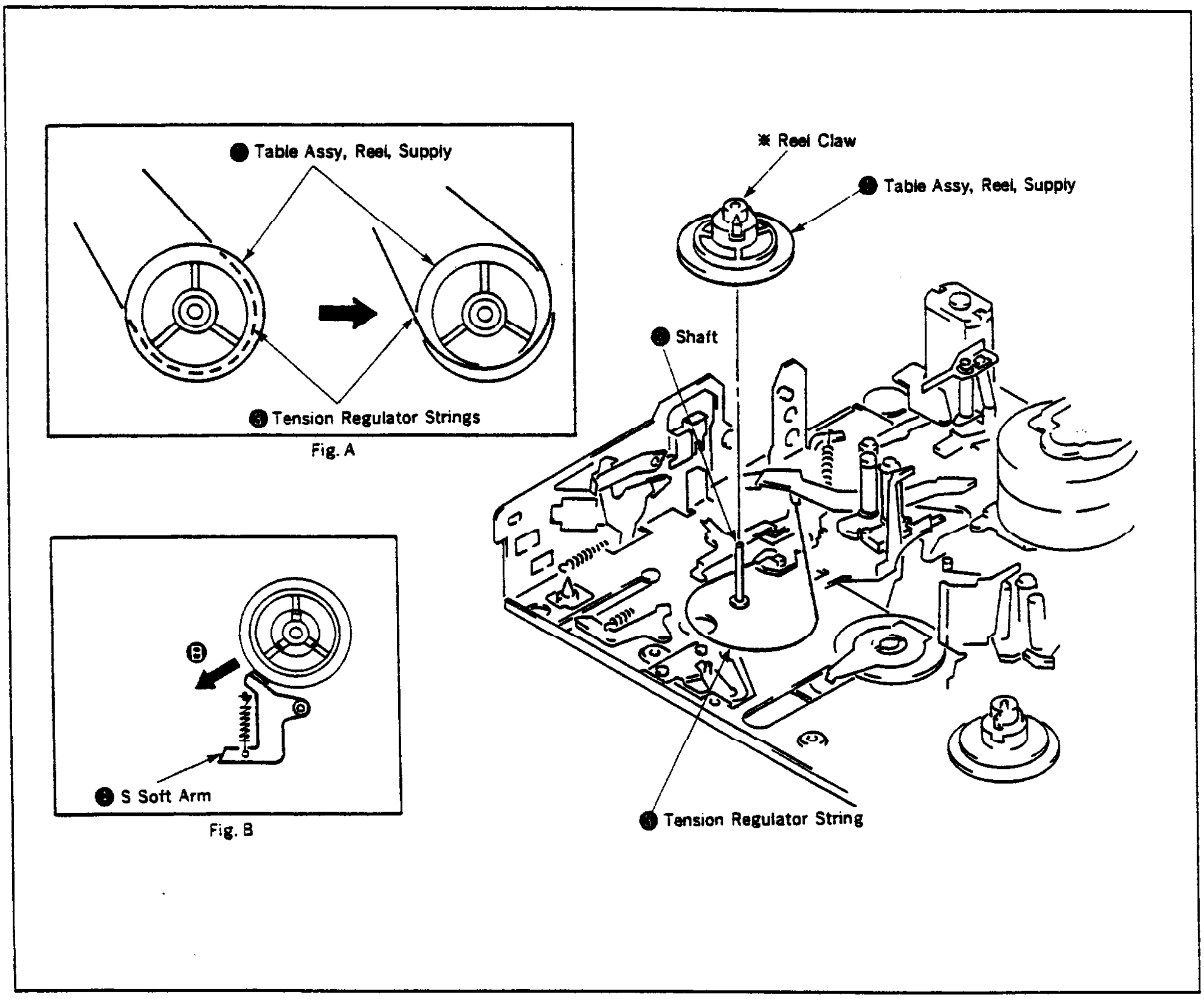

● Table Assy, Reel, Supply
● Tension Regulator Strings
Ⓑ
● S Soft Arm
⋇ Reel Claw
● Table Assy, Reel, Supply
● Shaft
● Tension Regulator String

Fig. A

Fig. B

Fig. 10

3-4 TABLE ASSY, REEL, TAKE-UP (Fig. 11)

1. Removal

1) Select the USE mode.
2) Referring to 1-1, remove the cassette compartment holder assembly.
3) Referring to 3-1, remove the LED base.
4) Referring to 3-2, remove the retainer.
5) Dispace the T ratchet ❶ in a direction of the arrowⒶ.
6) With the claw (T ratchet head) of the T ratchet ❶ moved in a direction of the arrowⒷ, remove the Table assy, reel, take-up ❷.

Note : Dismount and remount the Table assy, reel, take-up ❷, holding the reel claw ⁎.

2. Mounting

1) Select the USE mode.
2) With the claw (T ratchet head) of the T ratchet ❶ moved in an arrow direction, mount the Table assy, reel, take-up ❷ to the shaft ❸.
3) Referring to 3-2, mount the retainer.
4) Referring to 3-1, mount the LED base.
5) Referring to 1-1, mount the cassette compartment holder assembly.

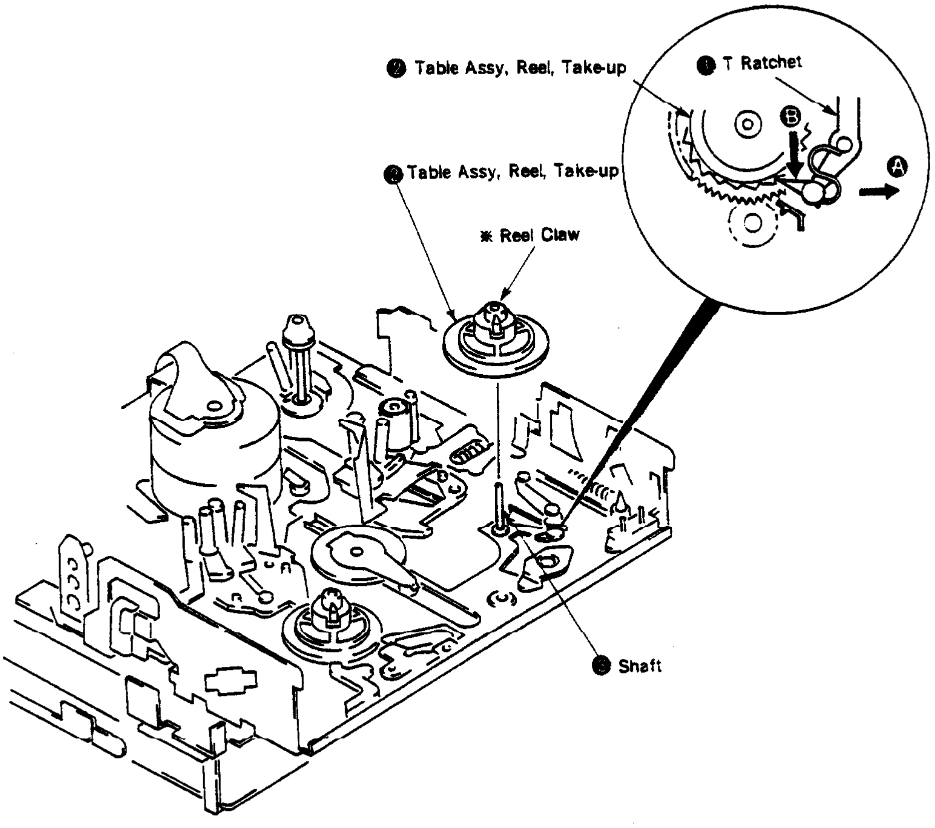


Fig. 11

3-5 ONEWAY CLUTCH ASSEMBLY (Fig. 12)

1. Removal

1) Select the USE mode.
2) Referring to the cassette compartment holder assembly.
3) Referring to 3-1, remove the LED base.
4) Remove the screw ●, and then, oneway clutch assembly ●.

2. Mounting

1) Select the USE mode.
2) Mount the oneway clutch assembly ● to the LS chassis and fix with the screw ●.
3) Referring 3-1, mount the LED base.
4) Referring to 1-1, mount the cassette compartment holder assembly.

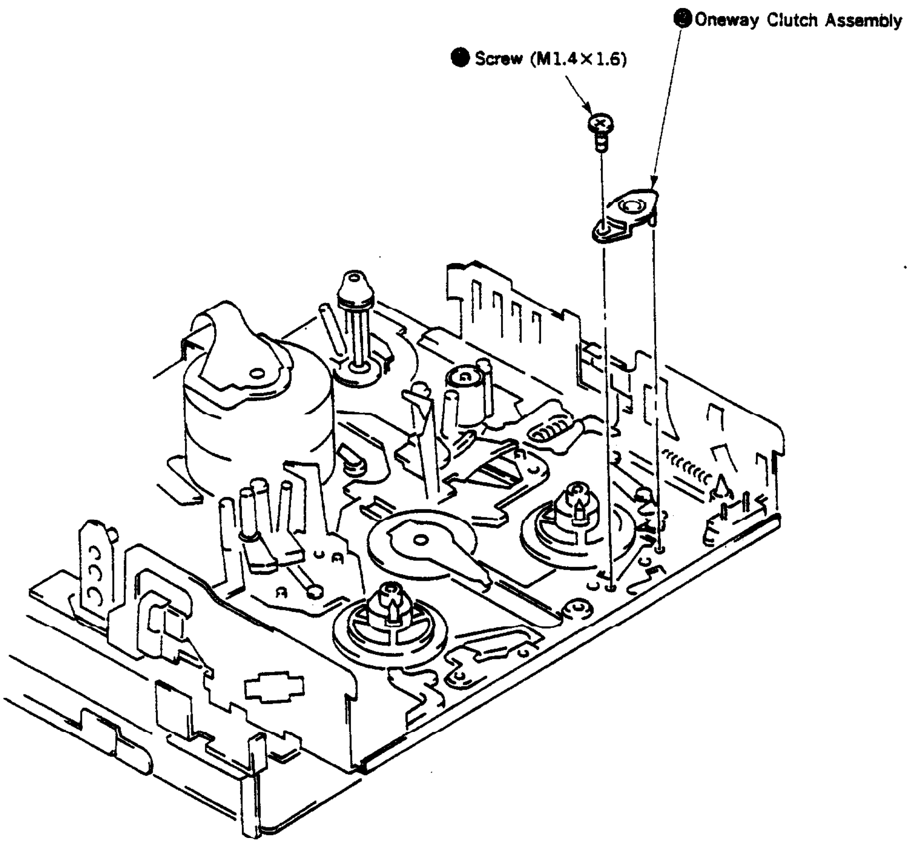


Fig. 12

3-6 S SOFT ARM ASSEMBLY (Fig. 13)

1. Removal

1) Select the USE mode.
2) Referring to 1-1, remove the cassette compartment holder assembly.
3) Referring to 3-1, remove the LED base.
4) Rerove the lock washer ❶, and then, the spring, tension ❷.
5) Remove the S soft arm assembly ❸ by rotating it in an arrow direction (until the hook ❺ comes off the LS chassis).

2. Removal

1) Select the USE mode.
2 As shoms in Fig. A, apply a quarter drip of oil to the arrowindicated part of the shaft ❹.
3) Mount the S soft arm assembly ❸ to the shaft ❹, rotating it in as arrow direction. (Be careful not to bend the hook ❺.)
4) Hook the spring, tension 2 onto the claw and fix it with lock washer 1.
5) Referring to 3-1, mount the LED base.
6) Referring to 1-1, mount the cassette compartment holder assembly.

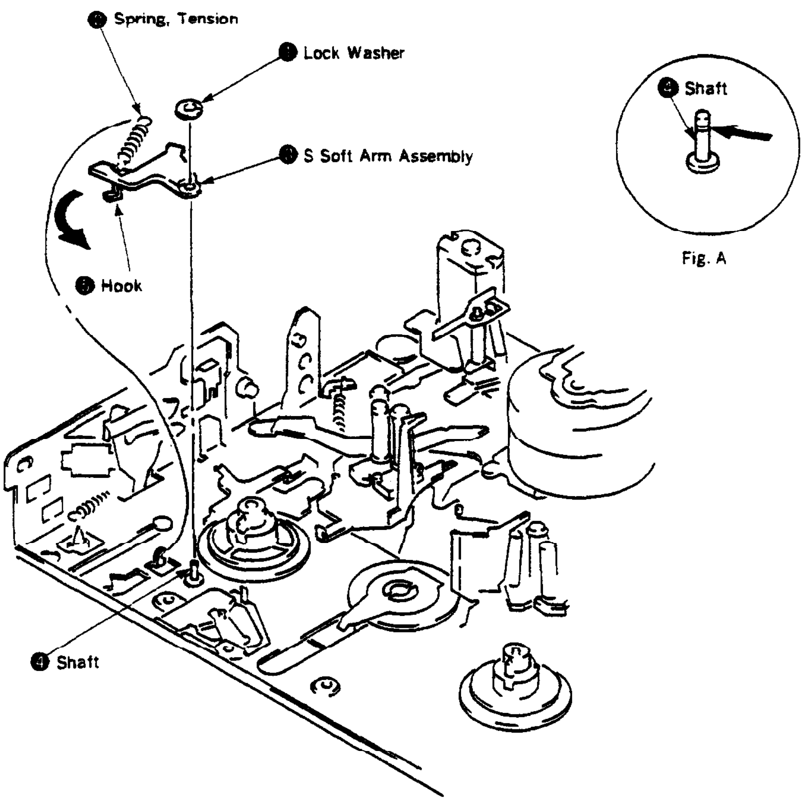


Fig. A

Fig. 13

3-7 LS CHASSIS ASSEMBLY (Fig. 14)

1. Removal

1) Select the [USE] mode.
2) Referring to 1-1, remove the cassette compartment holder.
3) Referring to 3-1, remove the LED base.
4) Referring to 3-2, remove the RL base assembly and retainer.
5) Remove the lock washer ①, and then, arm assy gear ②.
6) Select the [Q, REW] mode.
7) Remove the flexible rotary shaft ③, and then, the flexible connector ④.
8) Remove the E retaining ring ⑤ and three screws ⑥.
9) Remove the LS chassis assembly ⑦ in a direction of the arrow Ⓓ.

2. Mounting

1) As shown in Fig. A, apply Molyton grease to the arrow-indicated part of the LS chassis assembly ⑦.
2) Unload in the RDY mode. Start docking in the [Q, REW] mode after first GL. When docking the mechanical chassis and LS chassis assembly ⑦, it is necessary to place the following parts at specified positions.
3) Put the pin ●of the pinch arm assembly ●into the left side of the pinch press arm assembly●. (Fig.19)
4) Move the TG-1 arm assembly●in a direction of the arrow Ⓐ to put the pin ●into the concave of the arm assembly ●. (Fig. 17)
5) put the pin●of the S ratchet●into the right side the of the arm assembly●. (Fig. 17)

Simultaneously performing the operations above, push the roller of the guide lock arm ⑧ With the arm arc portion of the guide arm T assembly● (Fig. 15) to push the LS chassis assembly ⑦ in a direction of the arrow Ⓔ, and at the same time, engage the claws of the guide rail base 1●, guide rail base 2●and guide rail base3●with those of the guide rail S● and guide rail T●. (Fig. 16)

Then, align the shafts ⑨ of the mechanical chassis With the four long joints of the LS chassis assembly ⑦, and put the LS pin●of the LS arm assembly●in the groove of the LS cam plate●. (Fig.18)

Note : Before docking, confirm that both EJ arm and LS arm are deeply inserted into the shafts. (If not properly fit, the set does not function even if the LS chassis is docked.

6) Mount the E retaining ring ⑤ and three screws ⑥.
7) Mount the flexible rotary shaft ③ and flexible connector ④.
8) Select the [USE] mode.
9) Mount the arm assy gear ② and fix with the lock washer ①.
10) Referring to 3-2, mount the RL base assembly and retainer.
11) Referring to 3-1, mount the LED base.
12) Referring to 1-1, mount the cassette compartment holder assembly.

Note : Using the mode selector, confirm that loading and unloading are performed smoothly.

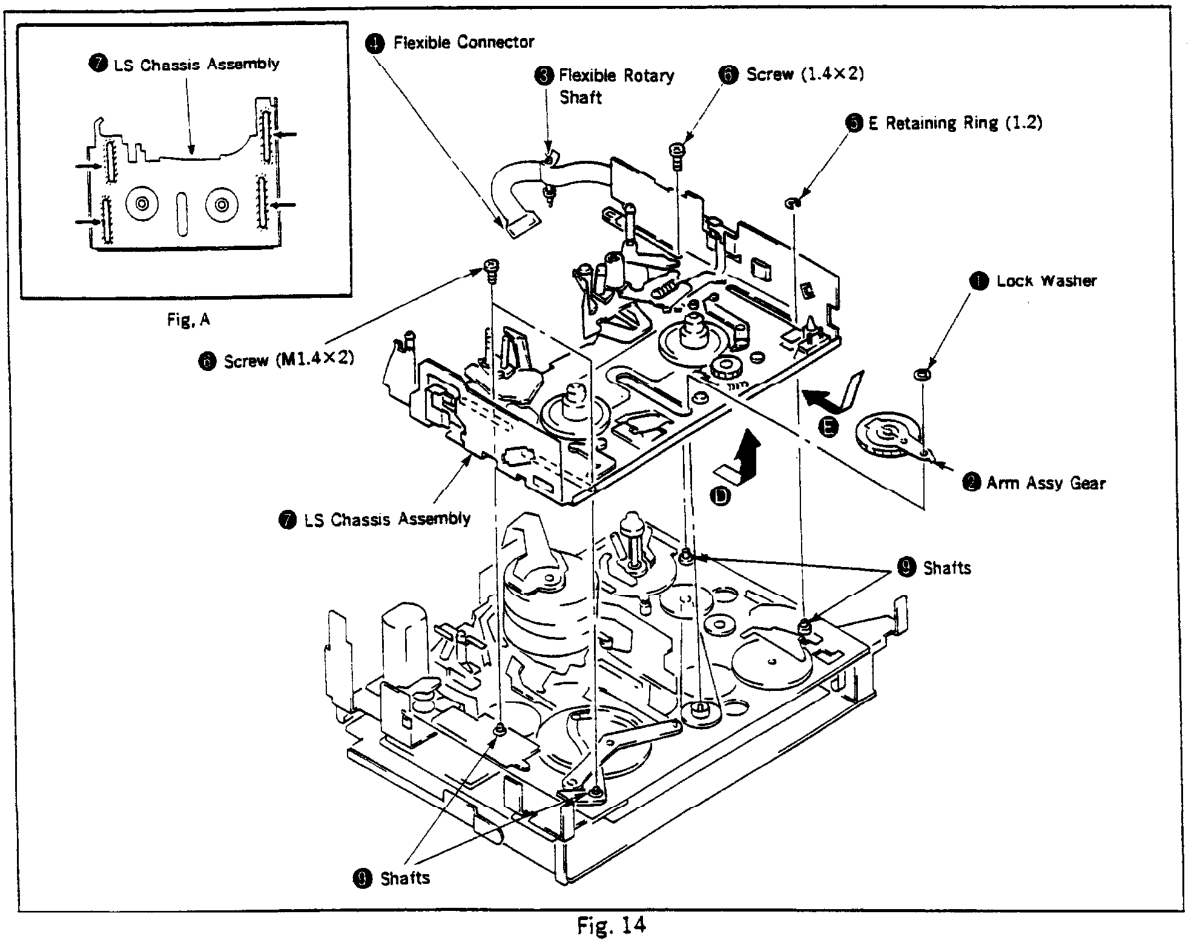


Fig. 14

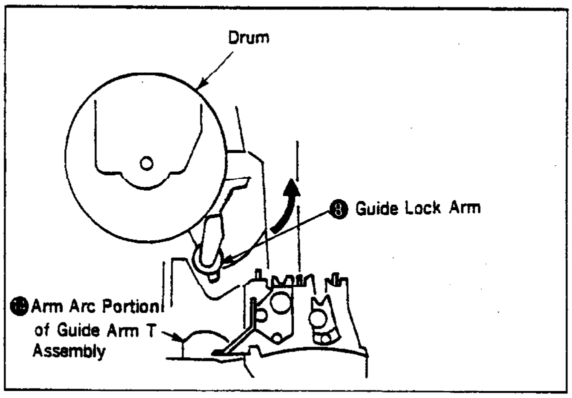

Drum
⑧ Guide Lock Arm
Arm Arc Portion of Guide Arm T Assembly

Fig. 15

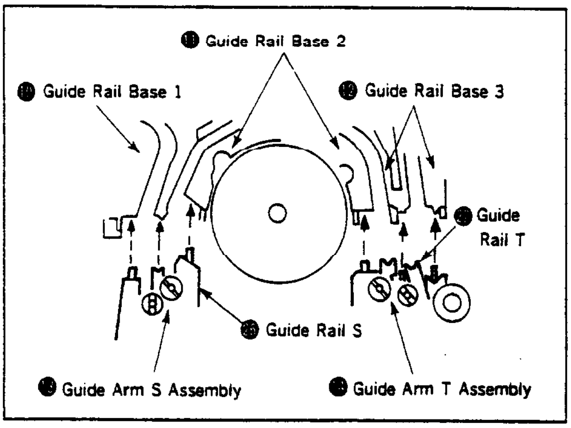

Guide Rail Base 2
Guide Rail Base 1
Guide Rail Base 3
Guide Rail T
Guide Rail S
Guide Arm S Assembly
Guide Arm T Assembly

Fig. 16

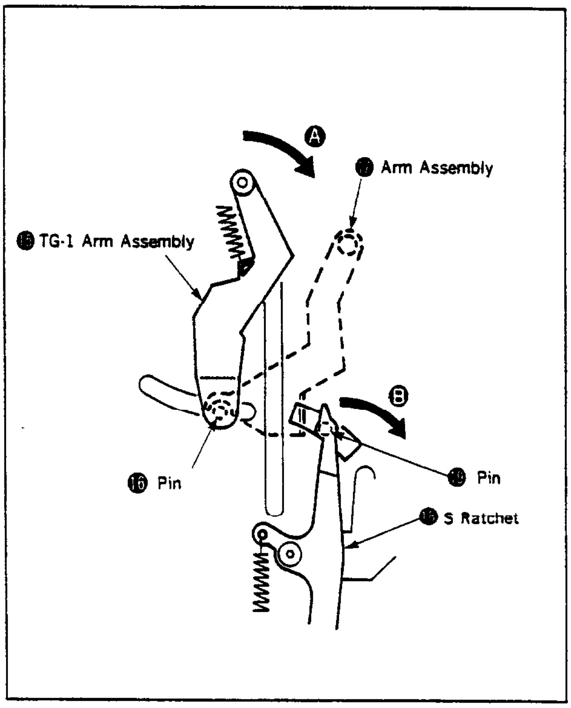

Ⓐ
Arm Assembly
TG-1 Arm Assembly
Ⓑ
Pin
Pin
S Ratchet

Fig. 17

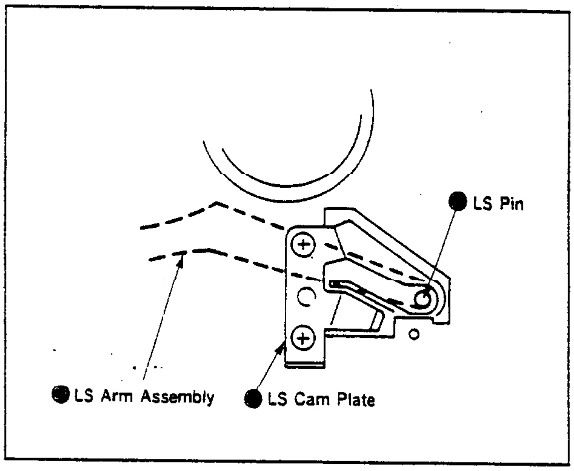

LS Pin
LS Arm Assembly
LS Cam Plate

Fig. 18

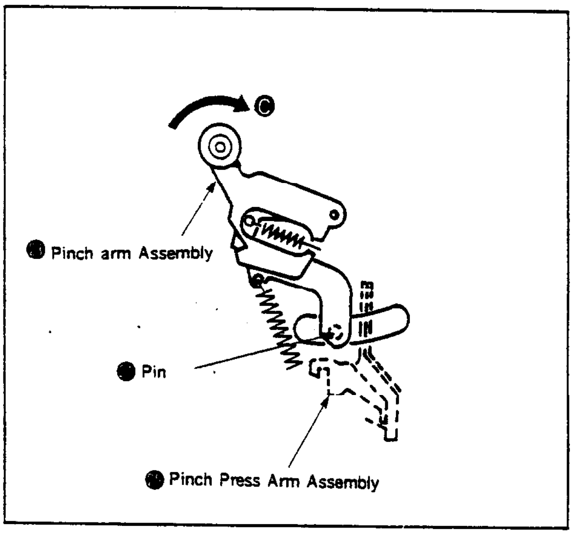

Ⓒ
Pinch arm Assembly
Pin
Pinch Press Arm Assembly

Fig. 19

-8 PINCH ARM ASSEMBLY (Fig. 20)

.. Removal

) Referring to 1-1, remove the cassette compartment holder assembly.

) Referring to 3-7, remove the LS chassis assembly.

) Remove the lock washer ❷ from the back of the LS chassis assembly ❶.

) Remove the spring, tension ❸, and then, pinch arm assembly ❹.

2. Mounting

1) As shown in Fig. A, apply oil to the hole of the boss ❺ over one third of a drip up to half a drip.
2) put the rotation center of the pinch arm assembly in the boss ❺ hole, and the pin ❻ in the long hole.
3) Hook the spring, tension ❸ onto the upper groove of the pinch return spring shaft ❼.
4) Mount the lock washer ❷ from the back of the LS chassis assembly ❶.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 1-1, mount the cassette compartment holder assembly.

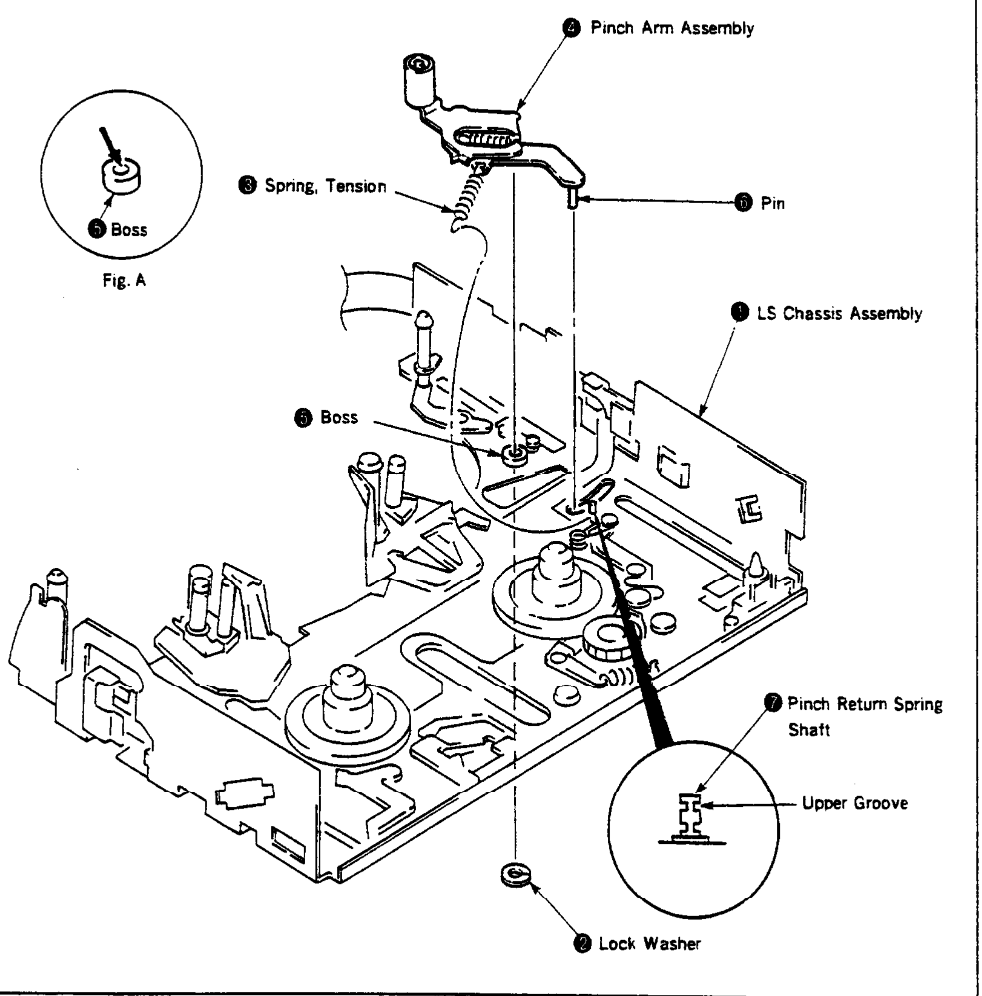

❹ Pinch Arm Assembly
❸ Spring, Tension
❻ Pin
❺ Boss
Fig. A
❶ LS Chassis Assembly
❺ Boss
❼ Pinch Return Spring Shaft
Upper Groove
❷ Lock Washer

Fig. 20

3-9 TG-11 ARM ASSEMBLY (Fig. 21)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-7, remove the LS chassis assembly.
3) Remove the lock washer ❷ from the back of the LS chassis assembly ❶.
4) Remove the TG-11 arm assembly ❸ and spring, torsion ❹.

Note : Be careful not to deform the TG-11 arm.

2. Mounting

1) As shown in Fig. A, apply oil to a boss hole over one third of a drip up a half a drip.
2) As shown in Fig. B, put the longer arm of the spring, torsion ❹ between the pinch arm boss ❺ and cam slider shaft ❽ of the LS chassis. Next, Hook the shorter arm of the spring, torsion ❹ around the pin ❻ of the TG-11 arm assembly ❸, rotate the TG-11 arm assembly and fix with the lock washer ❷. When this is done, see to it that the pin ❻ of the TG-11 arm assembly ❸ is located to the left side of the cam slider ❾ as shown in Fig. C.
3) Referring to 3-7, mount the LS chassis.
4) Referring to 1-1, mount the cassette compartment holder.

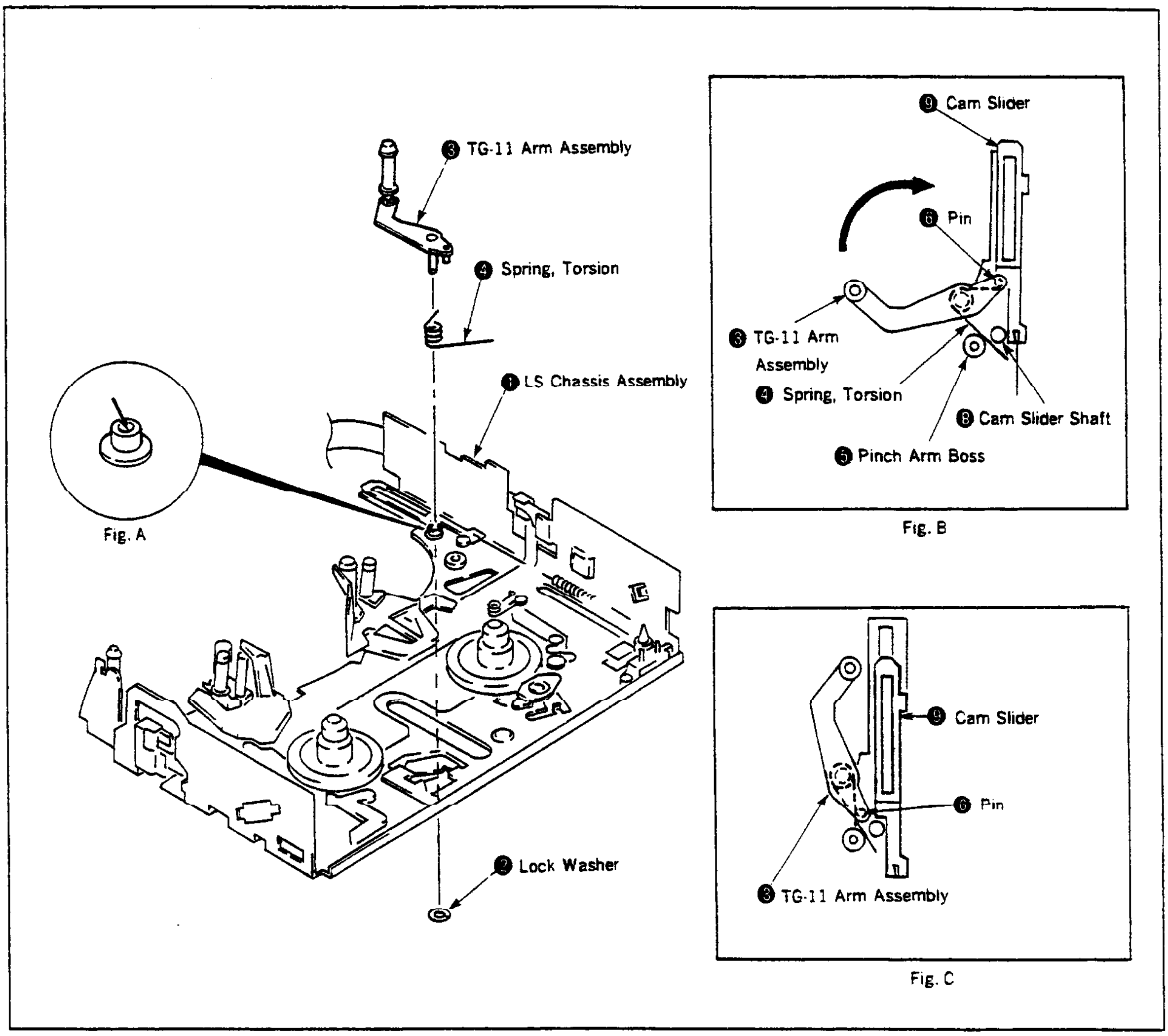

❸ TG-11 Arm Assembly
❹ Spring, Torsion
❶ LS Chassis Assembly
❷ Lock Washer
Fig. A
❾ Cam Slider
❻ Pin
❸ TG-11 Arm Assembly
❹ Spring, Torsion
❽ Cam Slider Shaft
❺ Pinch Arm Boss
Fig. B
❾ Cam Slider
❻ Pin
❸ TG-11 Arm Assembly
Fig. C

Fig. 21

3-10 TG-1 ARM ASSEMBLY (Fig. 22)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-7, remove the LS chassis.
3) Referring to 3-3, remove the table assy, reel, supply.
4) Remove the lock washer ❷ from the back of the LS chassis assembly ❶.
5) Remove the spring, tension ❸. Remove the string joint ❹ from the dowel ❺ of the TG-1 adjustment block ❾ by rotating it in a direction of the arrow Ⓐ as shown in Fig. C.
6) Remove the TG-1 arm assembly ❻.

Note : Dismount and remount the string joint ❹ carefully not to deform it.

2. Mounting

1) As shown in Fig. A, apply oil to the hole of the boss ❼ over one third of a drip up to half a drip.
2) As shown in Fig. C, mount the string joint ❹ to the TG-1 adjustment block ❾ in the opposite direction of the arrow Ⓐ.
3) Mount the TG-1 arm assembly ❻ to the boss ❼ in such a manner not to touch the guide and insert the pin ❽ into the long hole.
4) Hook the spring, tension ❸ onto the position shown in Fig. B.
5) Mount the lock washer ❷ from the back of the LS chassis assembly ❶.
6) Referring to 3-3, mount the table assy, reel, supply.
7) Referring to 3-7, mount the LS chassis assembly.
8) Referring to 1-1, mount the cassette compartment holder assembly.

Note : Referring to 3-27, adjust a tension regulator position.

Note : Referring to 3-28, adjust a FWD back tension.

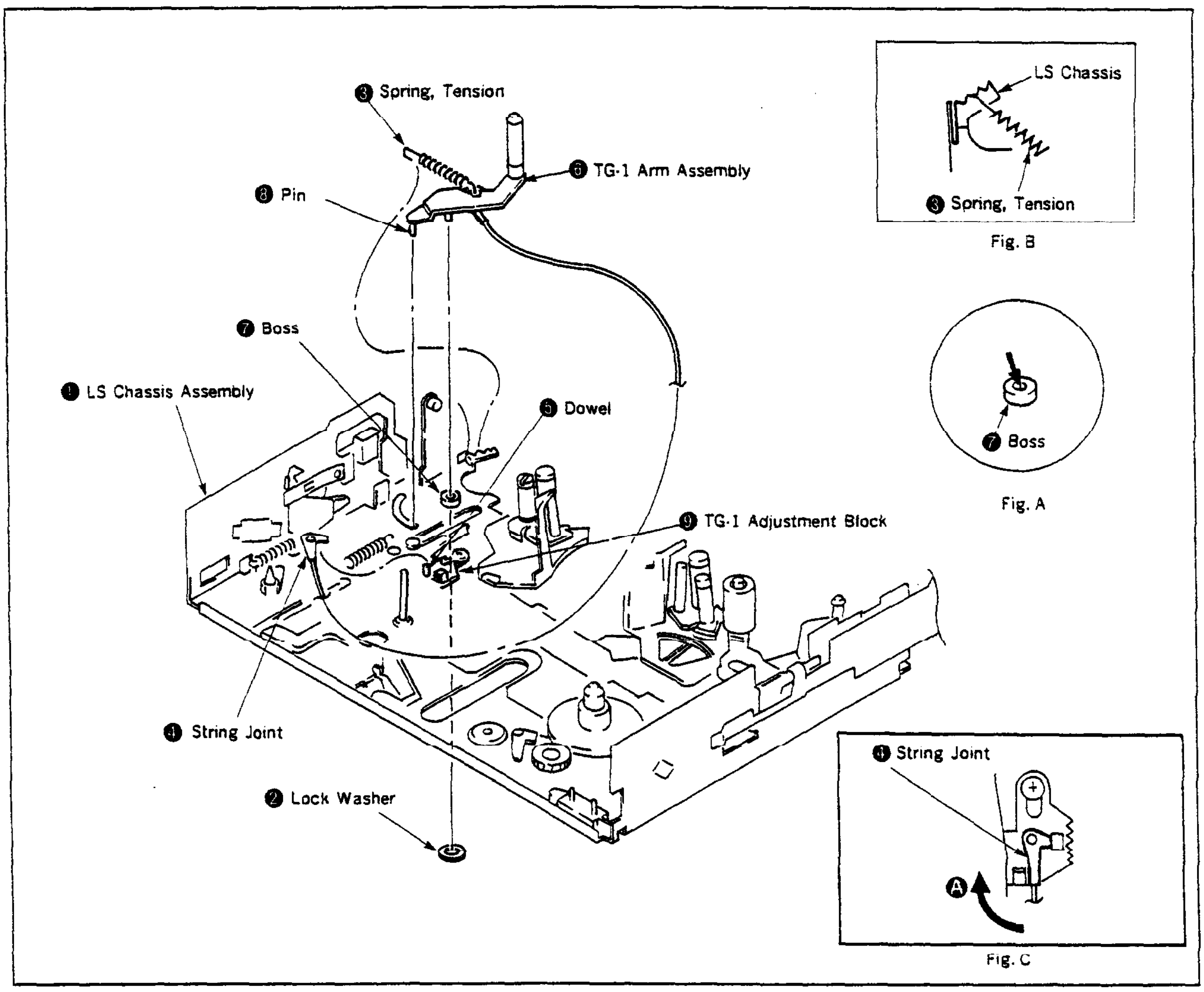

❸ Spring, Tension
❻ TG-1 Arm Assembly
❽ Pin
❼ Boss
❶ LS Chassis Assembly
❺ Dowel
❾ TG-1 Adjustment Block
❹ String Joint
❷ Lock Washer
LS Chassis
❸ Spring, Tension
Fig. B
❼ Boss
Fig. A
❹ String Joint
Ⓐ
Fig. C

Fig. 22

3-11 STRING JOINT (Fig. 23)

1. Removal

1) Referring to 3-10, remove the TG-1 arm assembly ❶.
2) Remove the joint holder ❷, and then, string assembly ❸.

2. Mounting

1) Put the dowel ❹ of the TG-1 arm assembly ❶ into the hole of the string assembly ❸ and mount the joint holder ❷. (Apply screw lock between the joint holder and TG-1 arm assembly.)
2) Referring to 3-10, mount the TG-1 arm assembly ❶.

Note : Be careful not to bend the string assembly ❸.

Note : Do not touch the guide ✱.

Note : The joint holder ❷, which was removed once, must not be used again.

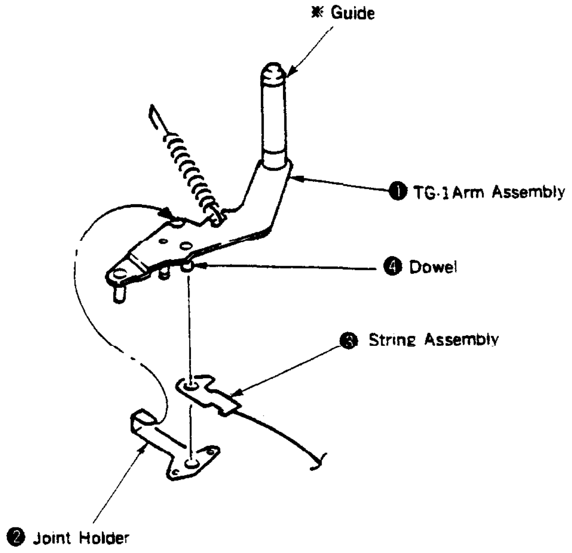

✱ Guide
❶ TG-1 Arm Assembly
❹ Dowel
❸ String Assembly
❷ Joint Holder

Fig. 23

3-12 GUIDE ARM T ASSEMBLY, GUIDE ARM S ASSEMBLY

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-7, remove *the LS chassis assembly.*
3) Rotate the guide arm T assembly ❶ and guide arm S assembly in arrow directions respectively, align their shafts ❸ with the holes as shown in Fig. A, and remove them. (Fig. 24)

Note : Do not touch the guide ✱. (Fig. 25 and Fig. 26)

2. Mounting

1) After inserting the guide arn T and S assemblies in the reverse order of removal, rotate them in the opposite directions of the *arrows respectively.*
2) Fit the TG-7 base assembly ❺ and TG-9 base assembly ❻ in the grooves of the guide rail T ❹. (Fig. 25)
3) Put the shaft ❸ flange in the long groove of the guide rail S ❽, and fit the TG-4 base assembly ❾ and TG-6 base assembly ❿ into the right and left grooves of the guide rail S ❽ respectively.

   When this is done, see to it that the flat spring of the TG-6 base assembly❿ is located below the guide rail S ❽ as shown in Fig. B. (Fig.26)
4) Referring to 3-7, mount the LS chassis assembly.
5) Referring to 1-1, mount the cassette compartment holder assembly.

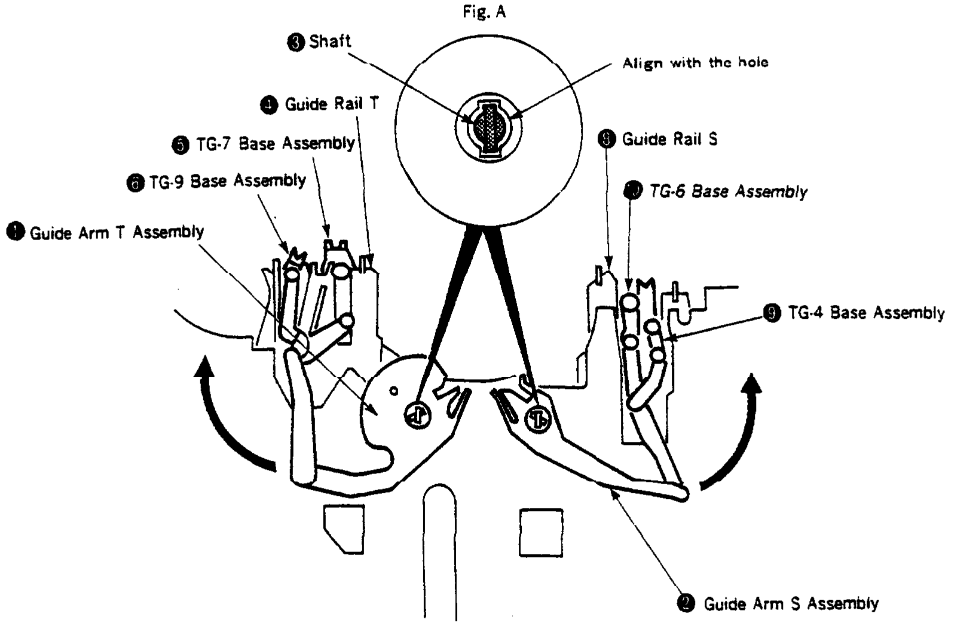


Fig. A
❸ Shaft
Align with the hole
❹ Guide Rail T
❺ TG-7 Base Assembly
❻ TG-9 Base Assembly
❶ Guide Arm T Assembly
❽ Guide Rail S
❿ TG-6 Base Assembly
❾ TG-4 Base Assembly
❷ Guide Arm S Assembly

LS Chassis Assembly Viewed from Back

Fig. 24

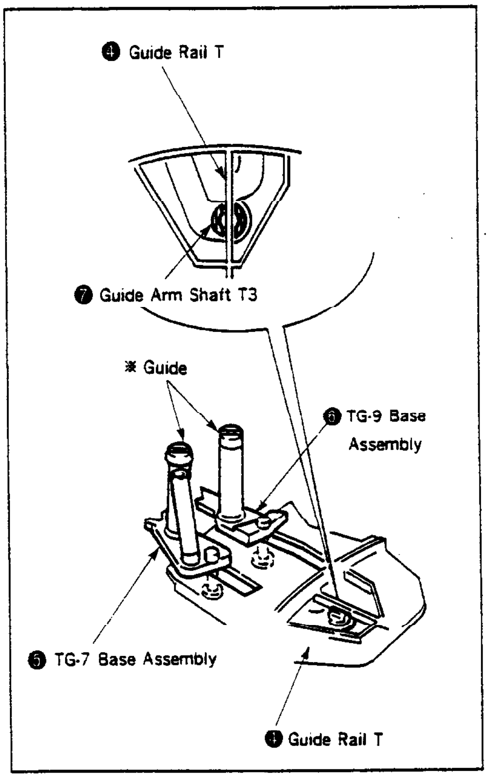

❹ Guide Rail T
❼ Guide Arm Shaft T3
※ Guide
❻ TG-9 Base Assembly
❺ TG-7 Base Assembly
❹ Guide Rail T

Fig. 25

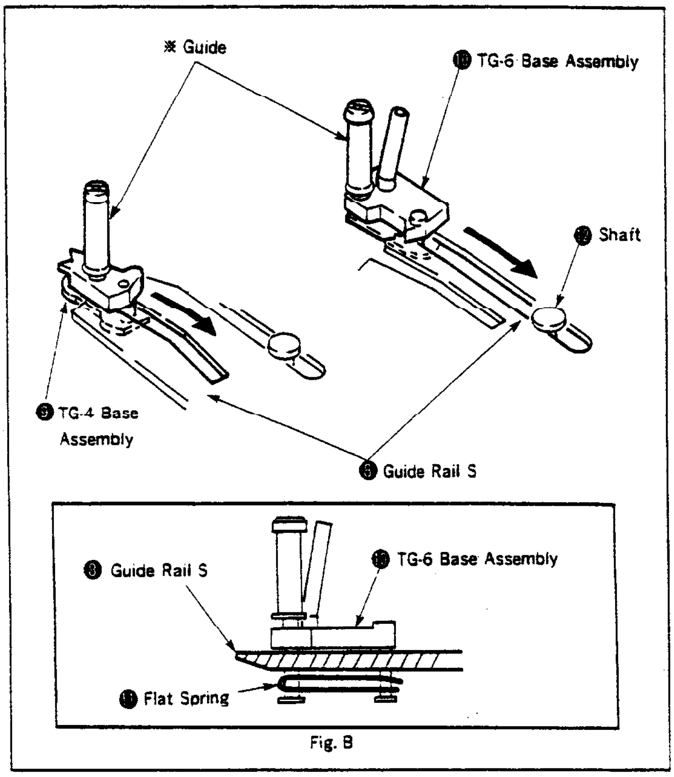

※ Guide
❿ TG-6 Base Assembly
⓬ Shaft
❾ TG-4 Base Assembly
❽ Guide Rail S
❽ Guide Rail S
❿ TG-6 Base Assembly
⓫ Flat Spring

Fig. B

Fig. 26

13 PINCH PRESS ARM ASSEMBLY (Fig. 27)

Removal

Referring to 1-1, remove the cassette compartment holder assembly.

Referring to 3-7, remove the LS chassis.

Remove the screw ❶, and then, pinch press arm assembly ❷.

2. Mounting

1) As shown in A, apply half a drip of molyton grease to an arrowindicated part of a boss hole.
2) As shown in Fig. B, apply half a drip of molyton grease each to the pinch press arm assembly ❷ at 3 places.
3) Put the pin ❹ of the pinch press arm assembly ❷ in the groove of the cam B ❸.
4) Fix. with the screw ❶.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 1-1, mount the cassette compartment holder assembly.

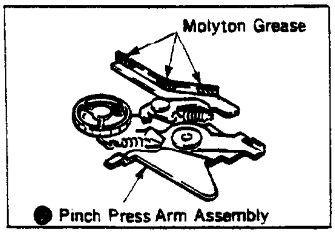

Molyton Grease
❷ Pinch Press Arm Assembly

Fig. B

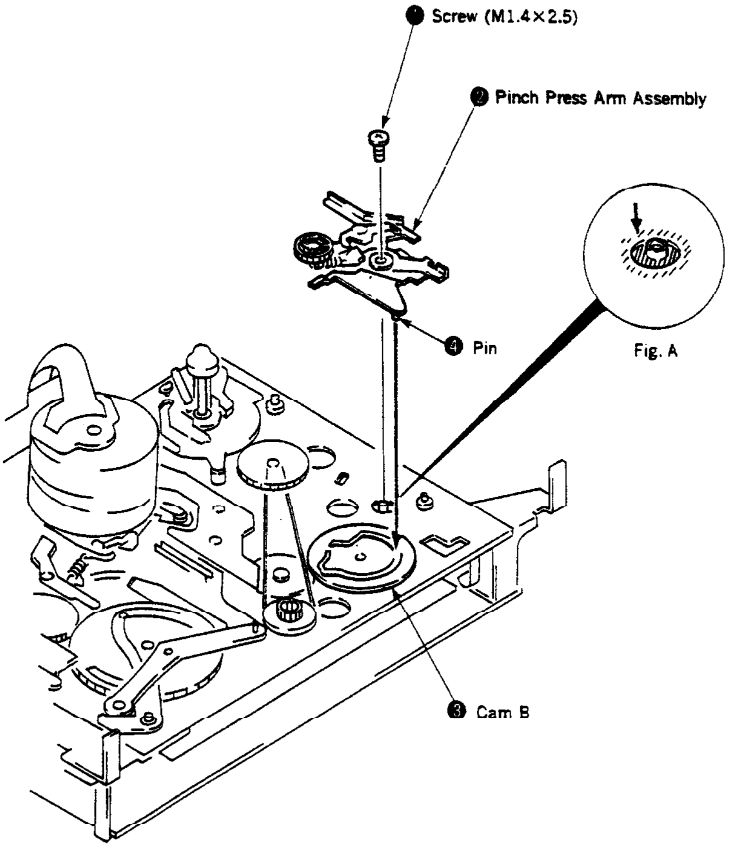

❶ Screw (M1.4×2.5)
❷ Pinch Press Arm Assembly
❹ Pin
Fig. A
❸ Cam B

Fig. 27

3-14 GL SLIDER ASSEBLY (Fig. 28)

1. Removal

1) Refering to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-7, remove the LS chassis assembly.
3) Referring to 3-15, remove the cam A.
4) Shift the GL slider assembly ❹ in a direction of the arrowⒶ.
5) Remove the screw ❶, and then, GL support S ❷.
6) Remove the lock washer ❸, and then, GL slider assembly ❹.

2. Mounting

1) Fit the claw ❺ of the GL slider assembly ❹ in the qroove of the GL support T ❼, and put the roller ❻ in the long hole of the chassis.
2) Stop with the lock washer ❸.
3) Shift the GL slider assembly ❹ in a direction of the arrowⒶ.
4) Fit the claw ❽ of the GL support ❷ in the part of the chassis marked with ⁕ and place the dowel ❾ in the hole of the chassis.
5) Fix with the screw ❶.
6) Referring to 3-7, mount the LS chassis assembly.
7) Referring to 1-1, mount the cassette compartment holder assembly.

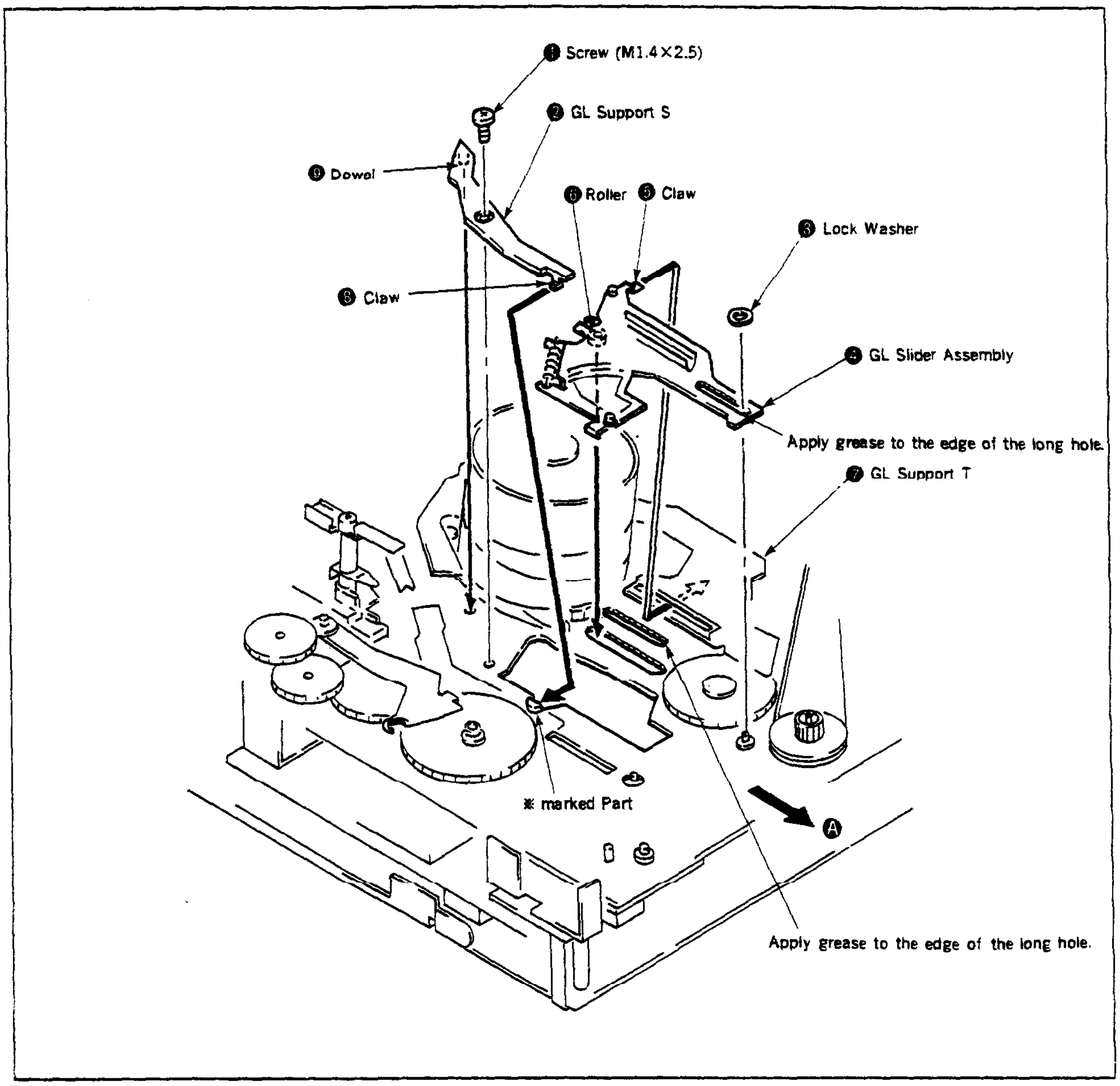

❶ Screw (M1.4×2.5)
❷ GL Support S
❾ Dowel
❻ Roller
❺ Claw
❸ Lock Washer
❽ Claw
❹ GL Slider Assembly
Apply grease to the edge of the long hole.
❼ GL Support T
⁕ marked Part
Ⓐ
Apply grease to the edge of the long hole.

Fig. 28

3-15 PHASE ADJUSTMENT(Fig. 29)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-7, remove the LS chassis. (Wen this is done, one of the BLANK, REC and READY modes must be selected.)
3) Remove the two screws ●, and remove the TG-1 cam base ❷ by moving it in a direction of the arrow Ⓐ. (Remove the notch ● from the groove of the No. 3 gear shaft.)
4) Remove the screw ❸, and remove the gear retainer ❹ by sliding it in a direction of the arrow Ⓑ.
5) Remove the arm assembly ❺, No. 0 gear ❻, No. 1 gear assembly ❼, No. 2 gear assembly ❽, No. 3 gear assembly ❾, lock washer ●, and then, mode gear assembly ●, respectively.
6) Being careful not to lose the LS roller ● of the LS arm, remove the LS arm assembly ● and EJ arm ●, respectively.
7) Remove the screw ●, and then, cam A ●.
8) Referring to 3-13 3), remove the pinch press arm assembly.
9) Remove the screw ●, and then, cam B ●.

2. Adjustment and Mounting

1) Face the hole ⓐ of the mode gear assembly ● to a direction of the arrow Ⓐ, move the GL slider assembly ● in a direction of the arrow Ⓑ, apply molyton grease to the pin of the GL slider assembly ●, and mount the LS roller ●. (Fig. 30)
2) Set a direction of the cam A ● so that the hole ⓒ of the cam A ● will be aligned with the hole of the mechanical chassis. (Fig. 31)
3) Move the GL slider ● so that the LS roller ● will be placed into the groove ⓓ of the cam A ●. At the same time, engage the mode gear assembly ● with the gear of the relay gear A ●, and mount the cam A ●. Insert a stick of about ϕ1.5mm in the hole ⓒ of the cam A ●. (Fig. 31)
4) Align the hole ⓔ of the cam B ● with the hoie of the mechanical chassis. At the same time, engage the relay gear B ● with the gear and mount it. (Fig. 32)
5) Referring to 3-13, mount the pinch press arm assembly.
6) Align the hole ⓕ of the No. 3 gear assembly ❾ with the hole of the mechanical chassis, and at the same time, engage the mode gear assembly ● with the gear to mount. (Fig. 33)
7) Mount the No. 2 gear assembly ❽, No. 1 gear assembly ❼ and No. 0 gear ❻ in that order. Mount the arm assembly ❺ to the shaft and put the pin ● in the groove of the No. 3 gear assembly ❾, (Fig. 34)
8) Put the TG-1 cam base ❷ in place, fit the notch ● to the shaft and shift it in an arrow direction, and mount the screws ● and ● in that order. (Fig. 35)
9) Put the gear retainer ❹ in place, slide it in an arrow direction and fix it with the screw ❸. (Fig. 36)
10) Seeing to it that the EJ arm ● and the LS roller ● of the LS arm assembly ● are put in the groove ⓖ of the cam A ●, mount them in that order. (Fig. 29 and Fig. 30)
11) Referring to 3-7, mount the LS chassis assembly.
12) Referring to 1-1, mount the cassette compartment holder assembly.

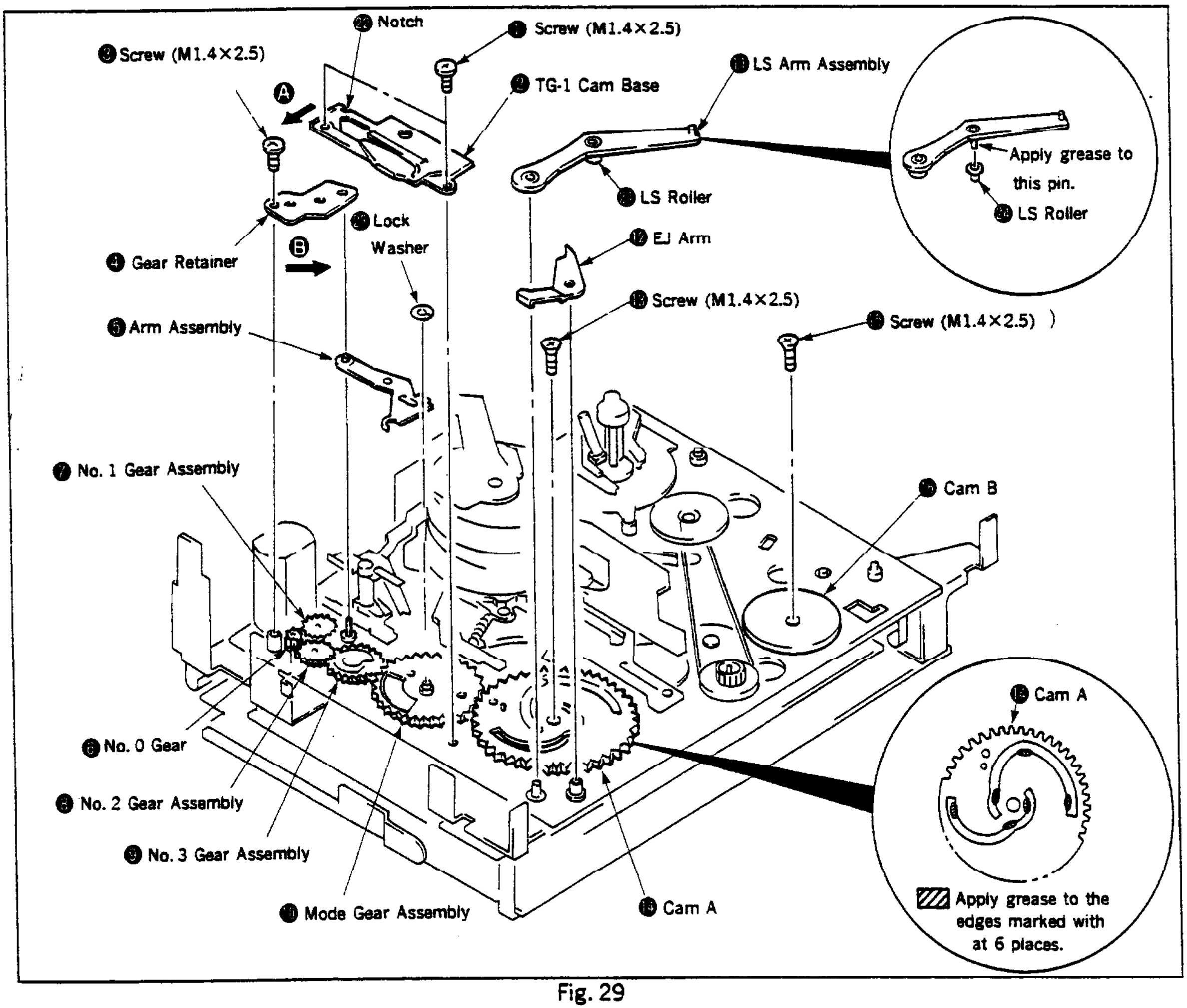

● Notch
● Screw (M1.4×2.5)
❸ Screw (M1.4×2.5)
❷ TG-1 Cam Base
● LS Arm Assembly
Ⓐ
● LS Roller
● Lock Washer
⑫ EJ Arm
❹ Gear Retainer
Ⓑ
● Screw (M1.4×2.5)
❺ Arm Assembly
● Screw (M1.4×2.5)
Apply grease to this pin.
● LS Roller
❼ No. 1 Gear Assembly
● Cam B
● Cam A
❻ No. 0 Gear
❽ No. 2 Gear Assembly
❾ No. 3 Gear Assembly
● Mode Gear Assembly
● Cam A
▨ Apply grease to the edges marked with at 6 places.

Fig. 29

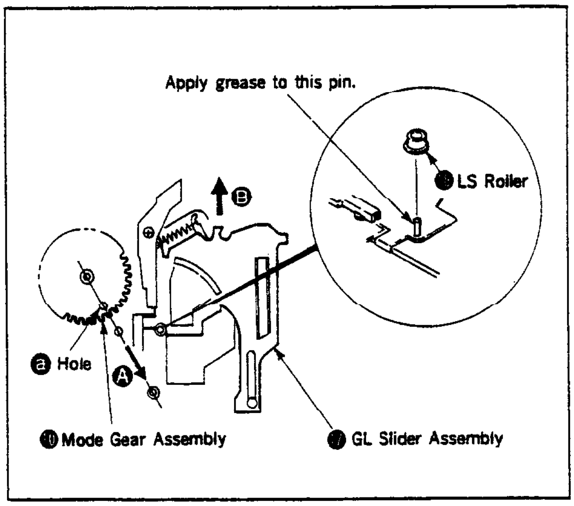

Apply grease to this pin.
⑲ LS Roller
Ⓑ
ⓐ Hole
Ⓐ
⑱ Mode Gear Assembly
⑰ GL Slider Assembly

Fig. 30

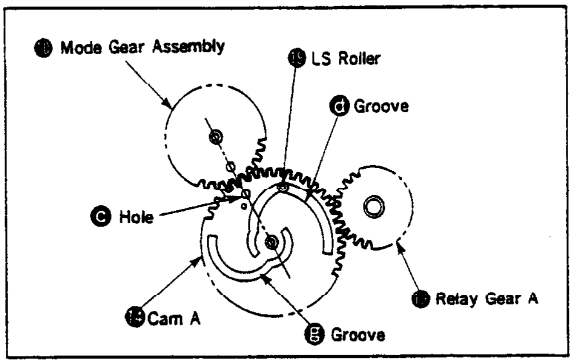

⑱ Mode Gear Assembly
⑲ LS Roller
ⓓ Groove
ⓒ Hole
⑮ Relay Gear A
⑭ Cam A
ⓖ Groove

Fig. 31

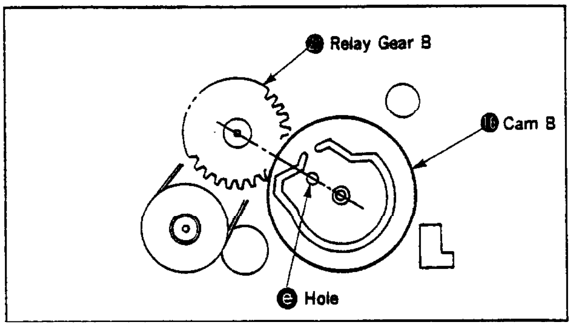

⑳ Relay Gear B
⑯ Cam B
ⓔ Hole

Fig. 32

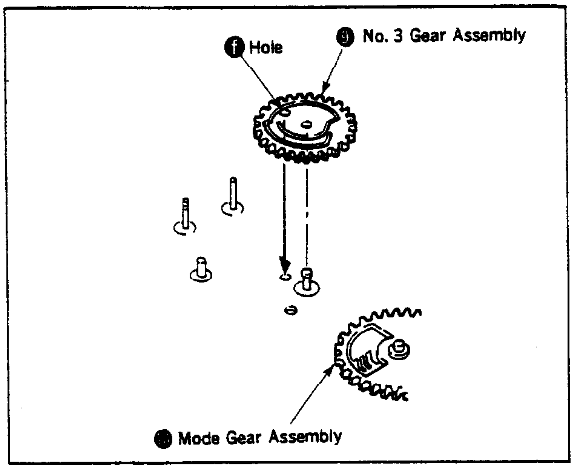

ⓕ Hole
⑨ No. 3 Gear Assembly
⑱ Mode Gear Assembly

Fig. 33

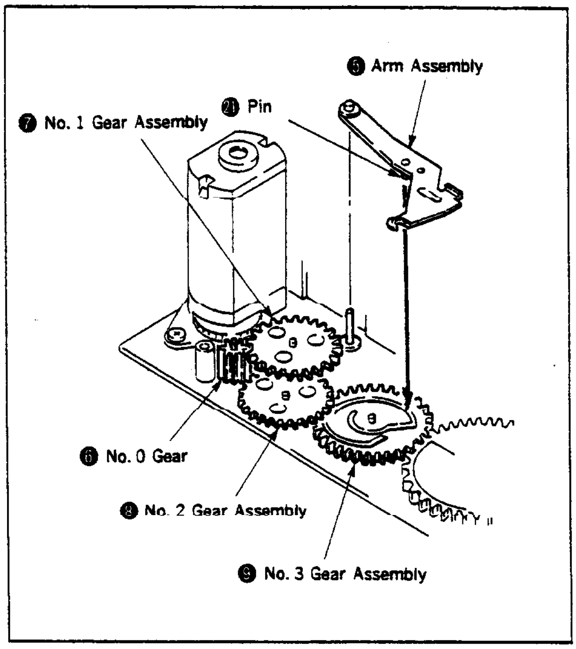

⑤ Arm Assembly
㉑ Pin
⑦ No. 1 Gear Assembly
⑥ No. 0 Gear
⑧ No. 2 Gear Assembly
⑨ No. 3 Gear Assembly

Fig. 34

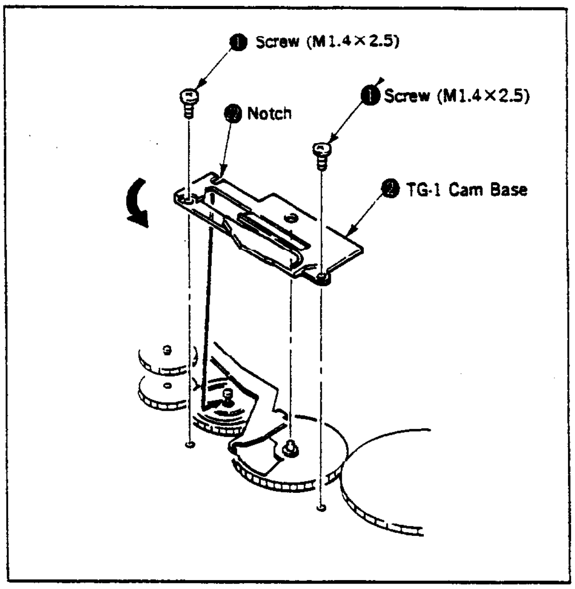

① Screw (M1.4×2.5)
ⓗ Notch
① Screw (M1.4×2.5)
② TG-1 Cam Base

Fig. 35

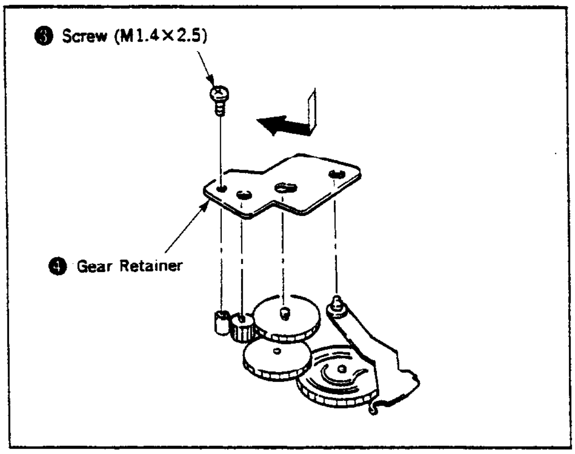

③ Screw (M1.4×2.5)
④ Gear Retainer

Fig. 36

.6 GEAR TRAIN OPERATION CHECK (Fig. 37)

Removal

Referring to 1-1, remove the cassette compartment holder assembly.

Referring to 3-7, remove the LS chassis.

Referring to 3-17, remove the loading motor.

Check

Insert the tip of tweezers into the hole a of the cam A ❶.

Rotate the cam A ❶ by about two thirds of a turn in a direction of the arrowⒶ, and then, in a direction of the arrow Ⓑ by the same amount. Repeat this 3 times.

When this is done, check that each, gear, the CL slider assembly and LS arm assembly rotate smoothly, and that no load is applied to them.

4) At the same time, check that the LS roller ❷ is located almost at the end point of the groove of the cam A ❶ when the gear train comes into contact with the stoppers at both ends.

Note : When rotating the cam A ❶ with the tip of tweezers, etc., be careful not to scratch the mechanical chassis.

3. Mounting

1) Referring to 3-17, mount the loading motor.
2) Referring to 3-7, mount the LS chassis assembly.
3) Referring to 1-1, mount the cassette compartment holder assembly.

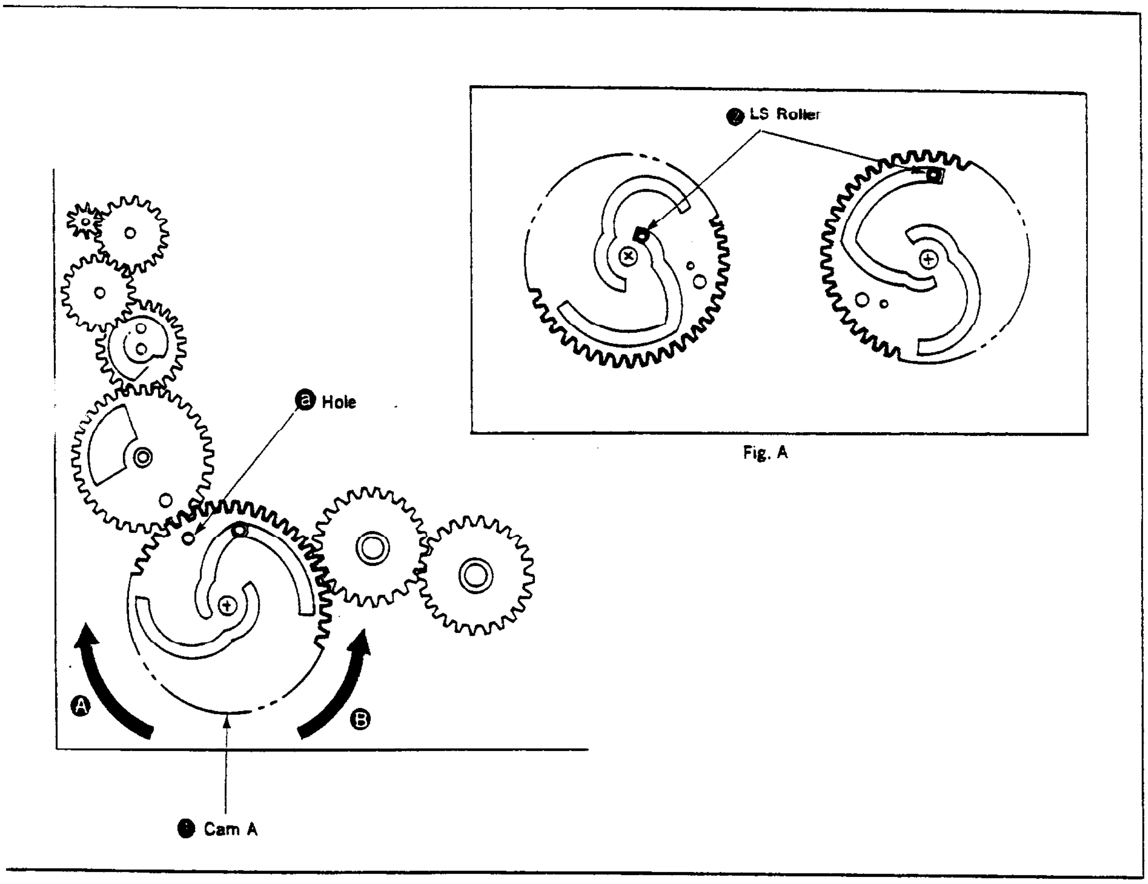


Fig. A

Fig. 37

3-17 LOADING MOTOR ASSEMBLY (Fig. 38)

1. Removal

1) Remove the LB-12 board.
2) Remove the connector ❶.
3) Remove the screws ❷ and ❸, and remove the loading motor assembly ❹ in an arrow direction.

2. Mounting

1) Put the pin ❺ of the loading motor assemmbly ❹ in the hole of the mechanical chassis, and mount it with the screws ❷ and ❸ in that order.
2) Mount the connector ❶.
3) Mount the LB-12 board.

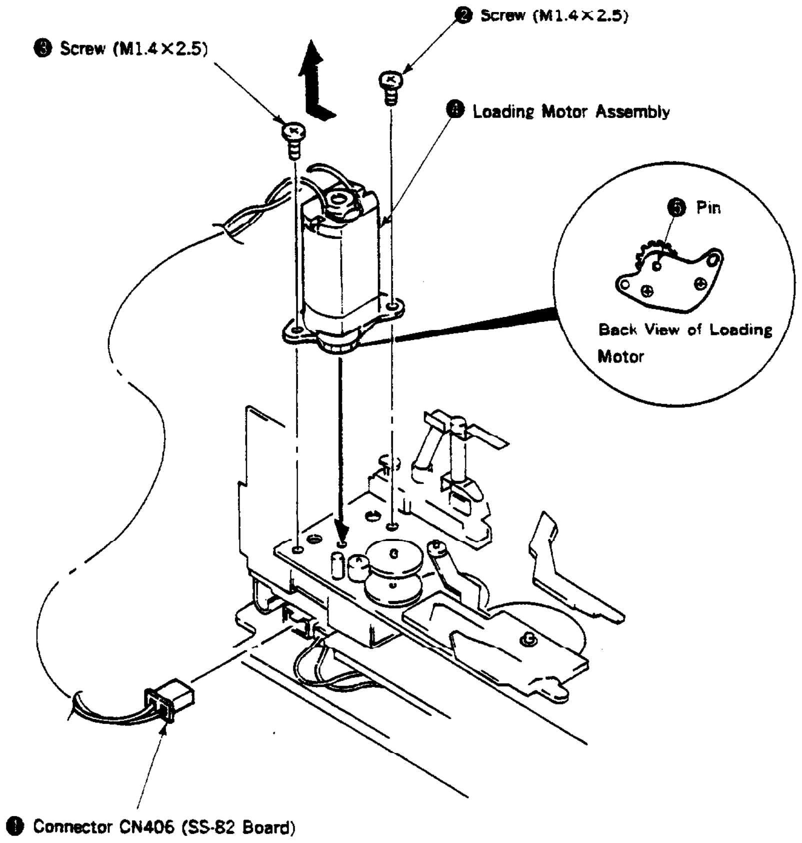

❷ Screw (M1.4×2.5)
❸ Screw (M1.4×2.5)
❹ Loading Motor Assembly
❺ Pin
Back View of Loading Motor
❶ Connector CN406 (SS-82 Board)

Fig. 38

3-18 GUIDE RAIL BASE 1 ASSEMBLY (Fig. 39)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Unskate the LS chassis a little.
3) Remove the two screws ●, and then, guide rail base 1 assembly ●.

Note : Be careful not to lose the spacers inserted in the parts ⓐ and ⓑ of the guide rail base 1 assembly ●. (Fig. B)

2. Mounting

1) Apply half a drip each of molyton grease at 2 places on the back of the guide rail base 1 assembly. (Fig. A)
2) Put the pin ● of the guide rail base 1 assembly ● in the notch of the chassis, and tighten the two screws ● with a torgue of 0.6kg•cm.
3) Referring to 1-1, mount the cassette compartment holder assembly.

Note1 : Mount paying attention to the number of spacers inserted and their locations.

Note2 : When tightening the screws, be careful not to bend the TG-2 upper flange ● with a screwdriver bit.

Note3 : Note that the part c of the guide rail base 1 assembly is easily broken. (Fig. B)

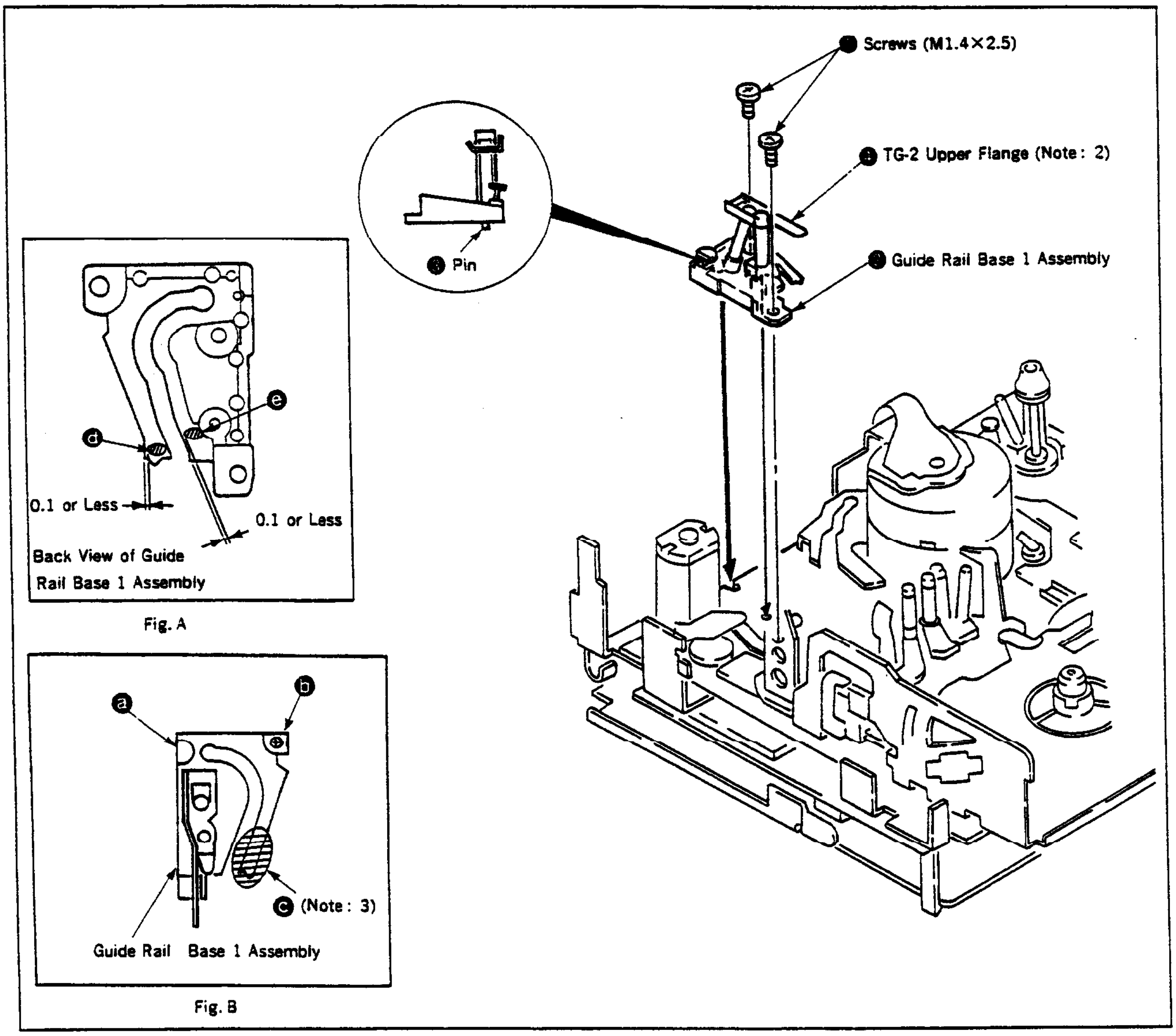

● Screws (M1.4×2.5)
● TG-2 Upper Flange (Note: 2)
● Guide Rail Base 1 Assembly
● Pin
ⓔ
ⓓ
0.1 or Less
0.1 or Less
Back View of Guide Rail Base 1 Assembly
ⓐ
ⓑ
ⓒ (Note: 3)
Guide Rail Base 1 Assembly

Fig. A

Fig. B

図39.

3-19 GUIDE RAIL BASE 2 ASSEMBLY (Fig. 40)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to the Service Manual, open the board in the back of the mechanical chassis.
3) Remove the four screws ●, and then, frame B assembly ● in a direction of the arrowⒶ.
4) Unskate the LS chassis a little.
5) Remove the two screws ●, and then, guide rail base 2 assembly ● in a direction of the arrowⒷ.

Note : Be careful not to hit the drum with a screwdriver bit because the screws are located closed to a drum lead.

2. Mounting

1) Apply half a drip of molyton grease each to 4 places on the back of the guide rail base 2 assembly. (Fig. A)
2) As shown in Fig. B, apply the striking parts of the guide rail base 2 assembly ● to the lower drum, and slide in an arrow direction to fit.
3) Pushing the part ※ of the guide rail base 2 assembly ● lightly in a direction of ⓔ (Fig. B), tighten the two screws ● with a torque of 0.8kg•cm.

Note : Note that the part f is easily broken.

4) Mount the frame B assembly with the four screws ●.
5) Mount the opened board to the back of mechanical chassis.
6) Referring to 1-1, mount the cassette compartment holder assembly.

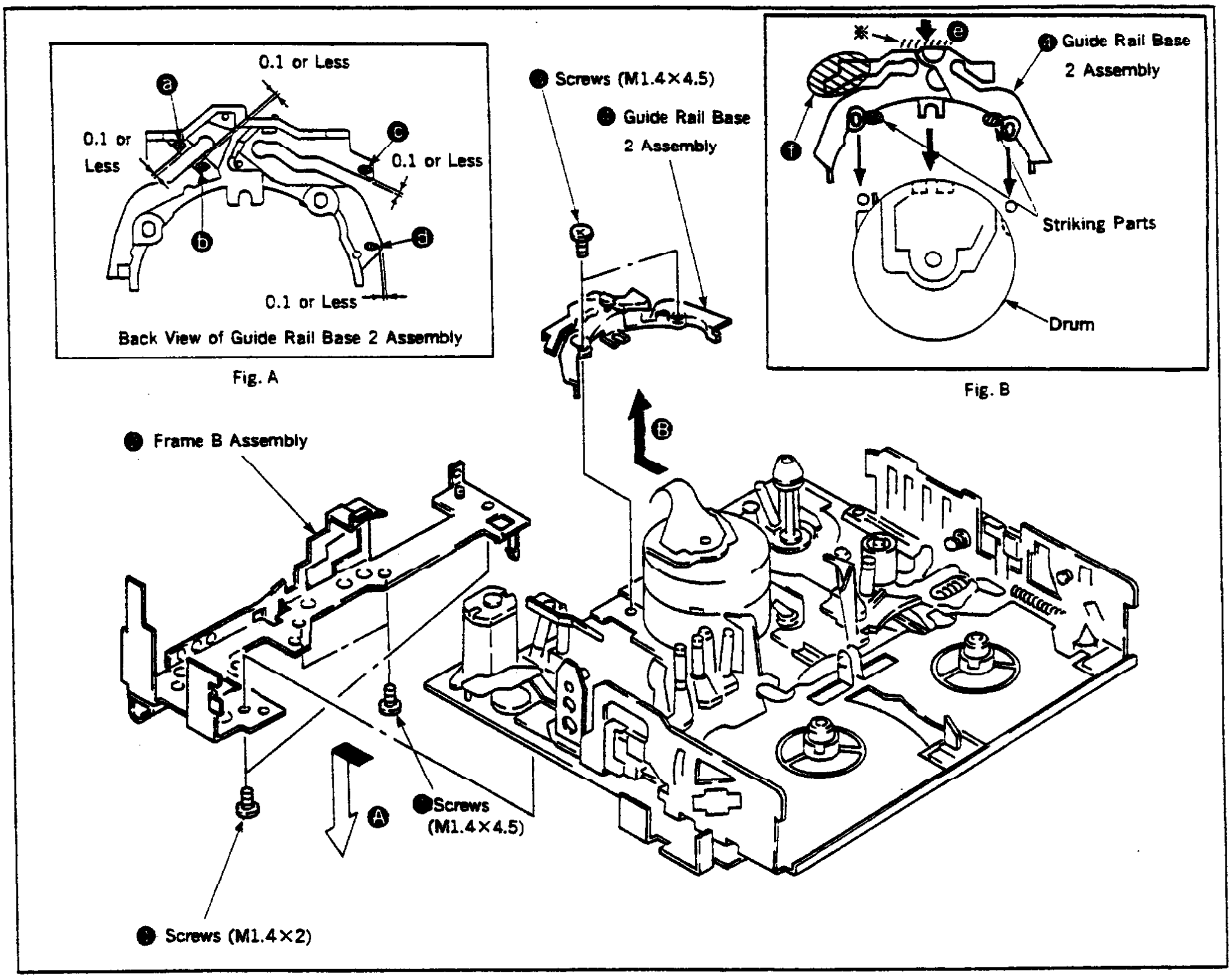

0.1 or Less
ⓐ
0.1 or Less
ⓒ
0.1 or Less
ⓑ
ⓓ
0.1 or Less
Back View of Guide Rail Base 2 Assembly
Fig. A
● Screws (M1.4×4.5)
● Guide Rail Base 2 Assembly
※
ⓔ
● Guide Rail Base 2 Assembly
ⓕ
Striking Parts
Drum
Fig. B
Ⓑ
● Frame B Assembly
Ⓐ
● Screws (M1.4×4.5)
● Screws (M1.4×2)

Fig. 40

3-20 GUIDE RAIL BASE 3 ASSEMBLY (Fig. 41)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Remove the flexible rotatry shaft ●.
3) Remove the two screws ●. Remove the guide rail base 3 assembly ● in an arrow direction, seeing to it that it does not hitch on the capstan housing.

Note : Handle the ※ marked part carefully because it is easily broken.

2. Mounting

1) Apply half a drip of molyton grease each to 2 places on the back of the guide rail base 3 assembly ●. (Fig. A)
2) Mount the guide rail base 3 assembly ●, seeing to it that it does not hitch on the capstan housing.
3) Tighten the two screws ● with a torque of 0.6kg•cm.
4) Mount the flexible rotary shaft ●.
5) Referring to 1-1, mount the cassette compartment holder assembly.

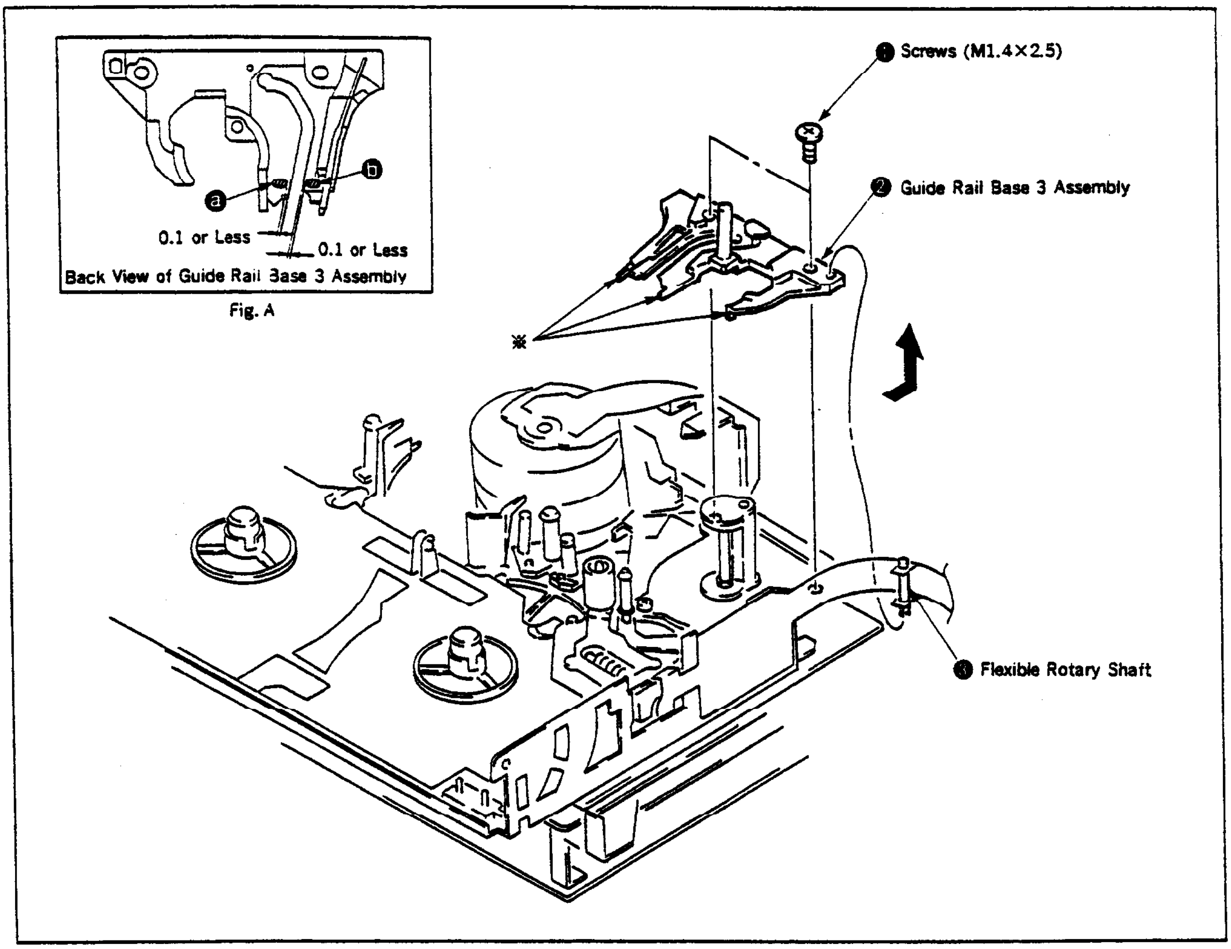

ⓐ
ⓑ
0.1 or Less
0.1 or Less
Back View of Guide Rail Base 3 Assembly
Fig. A
● Screws (M1.4×2.5)
● Guide Rail Base 3 Assembly
※
● Flexible Rotary Shaft

Fig. 41

3-21 CAPSTAN MOTOR ASSEMBLY (Fig. 42)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-20, remove the guide rail base 3 assembly.
3) Remove the connector ❷ of the capstan motor assembly ❶.
4) Remove the screw ❸. Disengaging the gear of the conversion gear assembly ❹, remove the capstan motor assembly ❶ in an arrow direction (obliquely).

2. Mounting

1) As shown in Fig. A, incline the capstan motor assembly ❶ to engage the gear of the capstan motor assembly ❶ with that of the conversion gear assembly ❹, and tighten the screw 3 with a torque of 1kg•cm.
   When this is done, be careful not to damage the gear of the conversion gear assembly ❹.
2) Mount the connector 2 to the capstan motor assembly ❶.
3) Referring to 3-20, mount the guide rail base 3 assembly.
4) Referring to 1-1, mount the cassette compartment holder assembly.

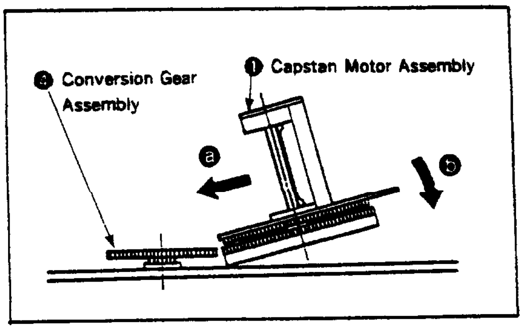

❹ Conversion Gear Assembly
❶ Capstan Motor Assembly
ⓐ
ⓑ

Fig. A

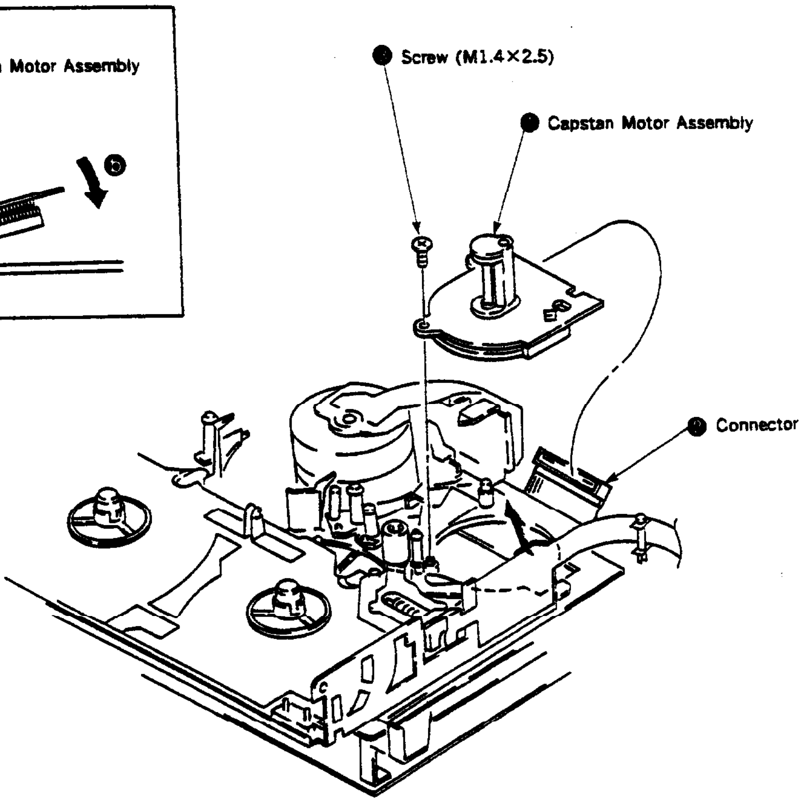

❸ Screw (M1.4×2.5)
❶ Capstan Motor Assembly
❷ Connector

Fig. 42

3-22 DRUM BASE ASSEMBLY (Fig. 42)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Remove the motor flexible board ● from the board.
3) Referring to 3-19, remove the guide rail base 2 assembly.
4) Remove the two screws ●.
5) Draw out the head flexible board ● carefully from the hole of the mechanical chassis not to damage it, and remove the drum base assembly.

2. Mounting

1) Put the head flexible board ● in the hole of the mechanical chassis and put the positioning pins ● of the drum base in the holes of the mechanical chassis.
2) Tighten the two screws ● with a torque of 0.8kg•cm.
3) Referring to 3-19, mount the guide rail base 2 assembly.
4) Mount the motor flexible board ● to the board.
5) Referring to 1-1, mount the cassette compartment holder assembly.

Note : After mounting, make tape path adjustment in Section 4.

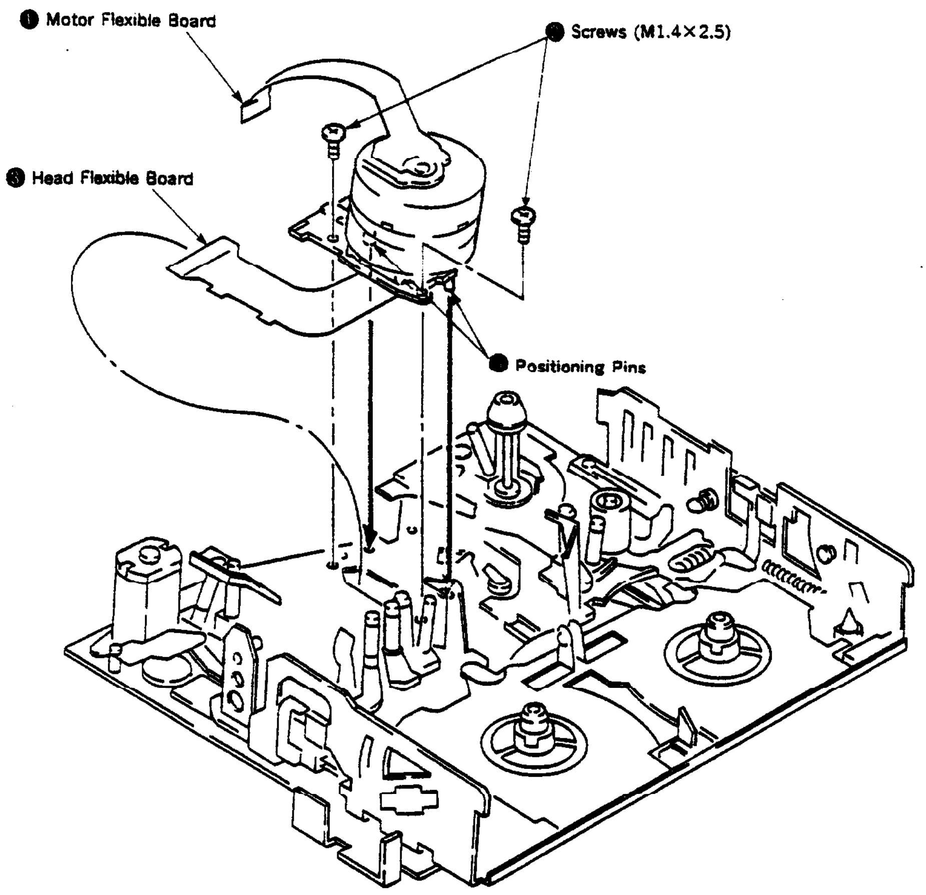


Fig. 42

3-23 DRUM ASSEMBLY (Fig. 43)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Remove the motor flexible board ❶ from the board.
3) Referring to 3-19, remove the guide rail base 2 assembly.
4) Remove the three screws ❷ from the back of the mechanical chassis.
5) Draw out the head flexible board ❸ carefully from the hole of the mechanical chassis not to damage it, and remove the drum assembly ❹.

2. Mounting

1) Put the head flexible board ❸ in the hole of the mechanical chassis, and mount it so that the pins ⓑ and ⓓ will be put in the holes ⓐ and ⓒ shown in Fig. A.
2) Tighten the three screws ❷ with a torque of 0.5kg•cm.
3) Referring to 3-19, mount the guide rail base 2 assembly.
4) Mount the motor flexible board ❶ to the board.
5) Referring to 1-1, mount the cassette compartment holder assembly.

Note : After mounting, make tape path adjustment in Section 4.

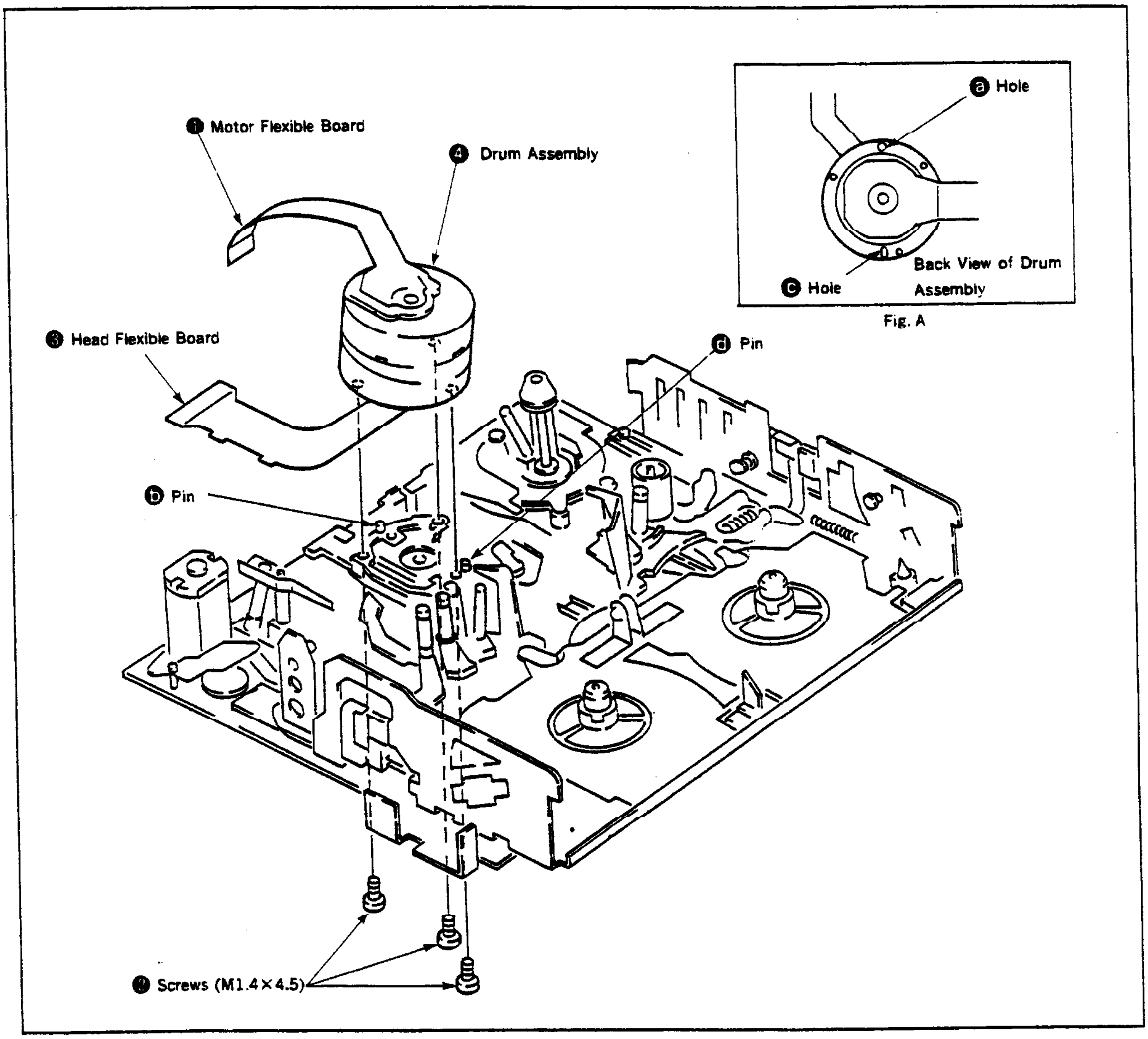
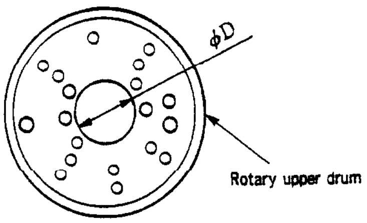

❶ Motor Flexible Board
❹ Drum Assembly
ⓐ Hole
Back View of Drum Assembly
ⓒ Hole
Fig. A
❸ Head Flexible Board
ⓓ Pin
ⓑ Pin
❷ Screws (M1.4×4.5)

Fig. 43

3-24 Replacement of Rotary Upper Drum Assembly

There are two rotary upper drum assembly types, depending on a color mark. (Fig. A in Fig. 45)



NTSC:

A-7049-190-A	Rotary upper drum assembly DGR-32-R-(1)
A-7049-189-A	Rotary upper drum assembly DGR-32-R-(2)

PAL:

A-7049-197-A	Rotary upper drum assembly DGR-37-R-(1)
A-7049-198-A	Rotary upper drum assembly DGR-37-R-(2)

Manufacturing upper dram

RANK	ϕD	MARK	
A	$\phi 8^{+0.0015}_{+0.001}$	Green	−01
B	$\phi 8^{+0.001}_{+0.0005}$	Green, Brown	
C	$\phi 8^{+0.0005}_{0}$	Black	
D	$\phi 8^{0}_{-0.0005}$	Black, Brown	
E	$\phi 8^{-0.0005}_{-0.001}$	Red	−11
F	$\phi 8^{-0.001}_{-0.0015}$	Red, Brown	
G	$\phi 8^{-0.0015}_{-0.002}$	Blue	
H	$\phi 8^{-0.002}_{-0.0025}$	Blue, Brown	

➡

Repairing upper drum

SUFFIX	ϕD	REMARKS	DRUM UPPER
−01	$\phi 8^{+0.001}_{+0.0005}$	Green, Brown	NTSC DGR-32-R-(1) PAL DGR-37-R-(1)
	$\phi 8^{+0.0005}_{0}$	Black	
−11	$\phi 8^{-0.001}_{-0.0015}$	Red, Brown	NTSC DGR-32-R-(2) PAL DGR-37-R-(2)
	$\phi 8^{-0.0015}_{-0.002}$	Blue	

1. Removal

1) Referring to 3-23, remove the drum assembly.
2) Remove the two screws ●. (Fig. 44)
3) Hold the outlet (base) of the guide protector ●, lift it up obliquely. In that state, hold the outer figure of the back yoke ● and remove it. (Fig. 44)

Note : Note that the flexible board and guide protector ● easily come off position because they are only pasted.

4) As shown in Fig. A, set the rotor earth spring ● around spring hook. (Fig. 44)
5) Using a drum screwdriver (Ref. No. J-11), remove the two hexagon socket bolts ●, and then, rotary upper drum assembly ●. (Fig. 45)
6) Using the drum screwdriver (Ref. No. J-11), remove the two hexagon socket bolts ●, and then, rotor ●. (Fig. A in Fig. 45)

2. Mounting

1) Clean the flange surface ● and the surface of the rotary upper drum assembly ● which comes into contact with it, and make sure that there is no dust or scratch. (Fig. 45)
2) Adjust a direction of the upper drum so that the head contact mold pin ● will be put in the reference hole of the rotary upper drum assembly ●, and push it in lightly. (Fig. 45)

Note : Check visually that the clearance between the upper and lower drums is about 0.05mm.

3) Using the drum screwdriver (Ref. No. J-11), tighten the two hexagon socket bolts ❺ (800g·cm) and rotate it with finger to make sure that there is no abnormality. (Fig. 45)
4) Put the pin ● of the rotor ● in the hole of the rotary upper drum assembly. Using the drum screwdriver (Ref. No. J-11), tighten the hexagon socket bolts ●. (800g·cm) (Fig. A in Fig. 45)
5) Remove the rotor earth spring ● from the spring hook. Using tweezers, etc., hook it onto the groove of the stator boss ●. (Fig. B in Fig. 45)

Note : See to it that the rotor earth spring ● is not located in the gap between the flange and stator.

6) Hold the outer figure of the back yoke ●, put it on the inner step of the upper drum and insert the other side slowly. (Fig. B in Fig. 44)
7) Tighten the two screws ●. (500g·cm) (Fig. 44)
8) Rotate the upper drum with finger to check that it runs smoothly.
9) Referring to 3-23, mount the drum assembly.

Note : After mounting, be sure to make tape path adjustment in Section 4.

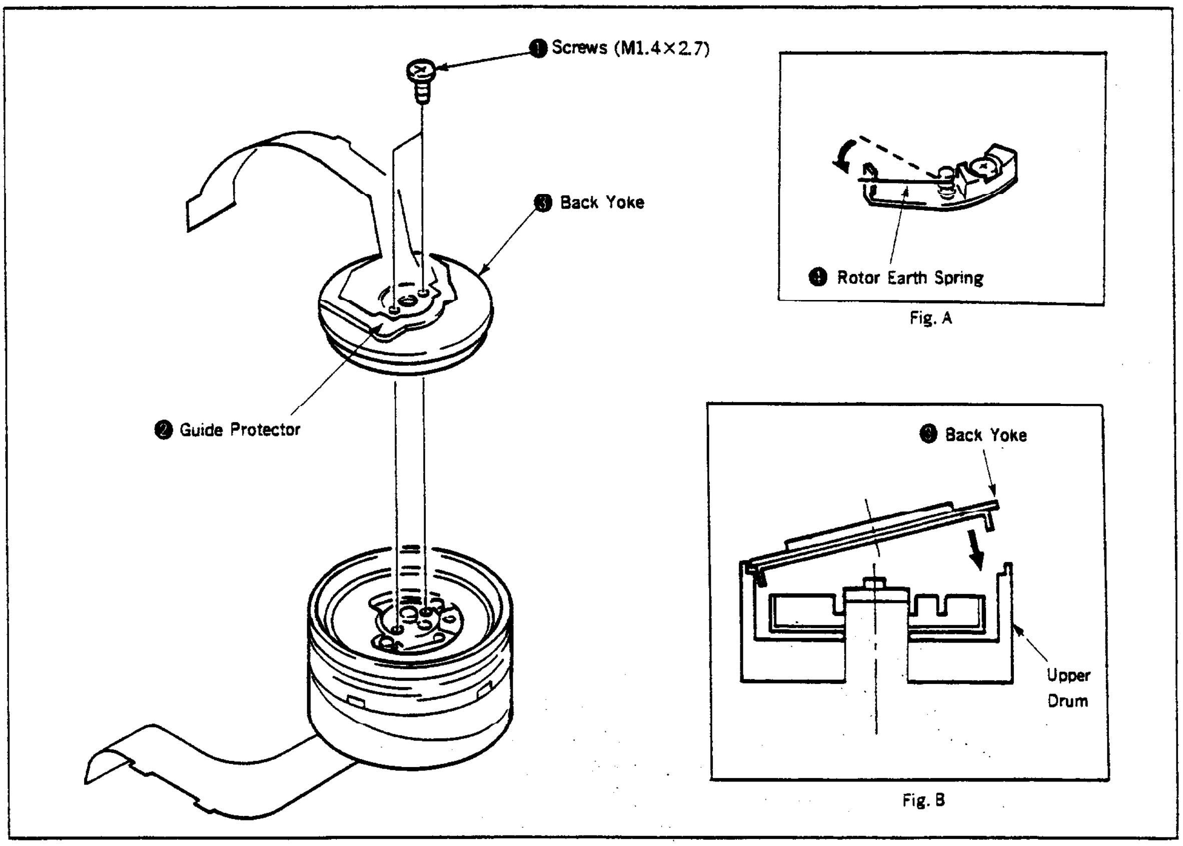

❶ Screws (M1.4×2.7)
❸ Back Yoke
❷ Guide Protector
❹ Rotor Earth Spring
Fig. A
❸ Back Yoke
Upper Drum
Fig. B

Fig. 44

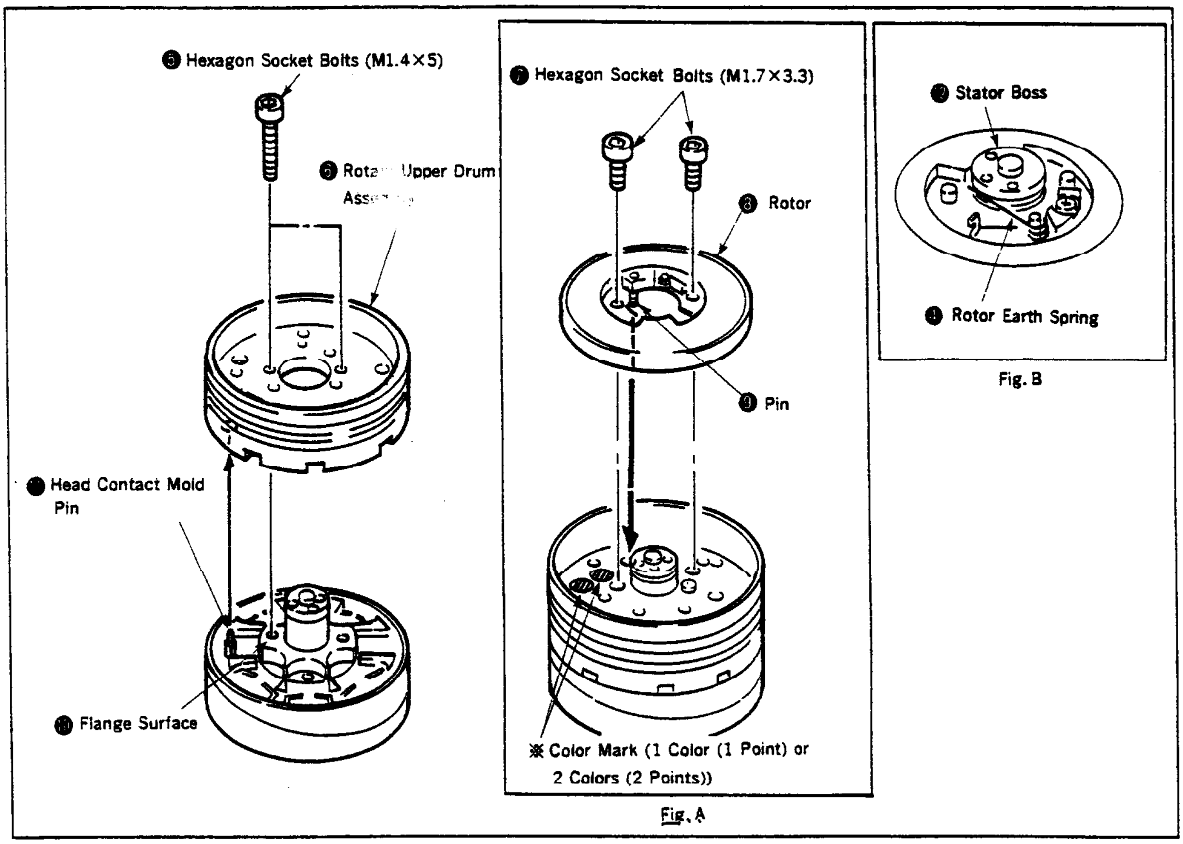

❺ Hexagon Socket Bolts (M1.4×5)
❻ Rota Upper Drum Ass
● Head Contact Mold Pin
❿ Flange Surface
❼ Hexagon Socket Bolts (M1.7×3.3)
❽ Rotor
❾ Pin
※ Color Mark (1 Color (1 Point) or 2 Colors (2 Points))
Fig. A
● Stator Boss
❹ Rotor Earth Spring
Fig. B

Fig. 45

5 REEL TABLE HEIGHT CHECK (Fig. 46)

Removal

Referring to 1-1, remove the cassette compartment holder assembly.

Referring to 3-1, remove the LED base.

Check

Using slide calipers, etc., check that distances from the LS chassis to the S reel table reel resting surface ❷ and T reel table reel resting surface ❸ are ~~3.2±0.5mm~~ respectively.

3. Mounting

1) Referring to 3-1, mount the LED base.
2) Referring to 1-1, mount the cassette compartment holder assembly.

changed values

A: $3.2^{+0.2}_{-0.15}$mm
B: 3.2±0.15mm

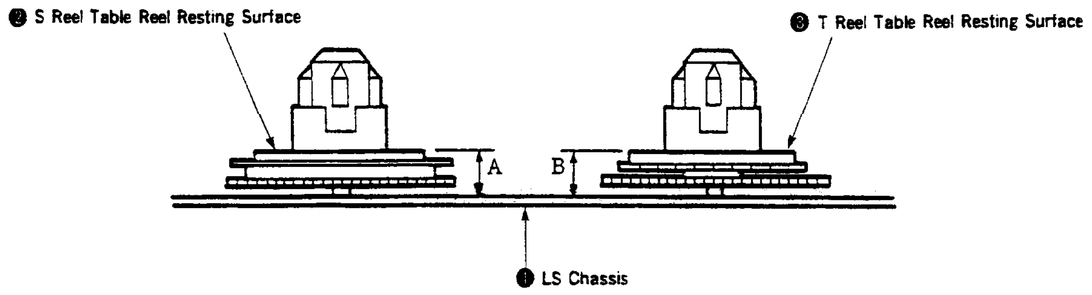

❷ S Reel Table Reel Resting Surface
❸ T Reel Table Reel Resting Surface
A
B
❶ LS Chassis

Fig. 46

6 FWD/RVS TORQUE CHECK

Set the FWD/RVS take-up torque cassette (Ref. No. J-10).

In the FWD mode, check that a T reel torque value is ~~6g·cm — 16g·cm~~ ☚ **changed value** 5 – 15g·cm.

Turn on the REC/REVIEW button and check that an S reel torque value is 25g·cm – 45g·cm.

When the values above are not met, replace the respective reel tables.

3-27 TENSION REGULATOR POSITION ADJUSTMENT

1. Removal

1) Referring to 1-1, remove the cassette compartment holder.

2. Adjustment

1) Set a cassette tape, select the REC mode and run the tape. (Refer to 1-3)
2) With the tape running, check that the distance between TG-1 and TG-2 is ~~9.58±0.2mm.~~ (Fig. 47)
3) When they are not at specified positions, remove the cassette and go through the steps 4) on.
4) Referring to 3-1, remove the LED base.
5) Loosen the screw ❶.

changed value

9.35 – 10.7mm.

6) When TG-1 is located inside (or outside) its specified position, shift the TG-1 adjustment block 2 slightly in a direction of the arrowⒶ (orⒷ) and fix with the screw ❶. (Fig. 48)
7) Referring to 3-1, mount the LED base.

Note : Use the cassette tape after feeding the tape as far as a middle point.

Note : When taking the steps 4) and 5), remove the cassette tape first.

Note : Check that TG1 is able to move in direction C during REC.

3. Mounting

1) Referring to 1-1, mount the cassette compartment holder assembly.

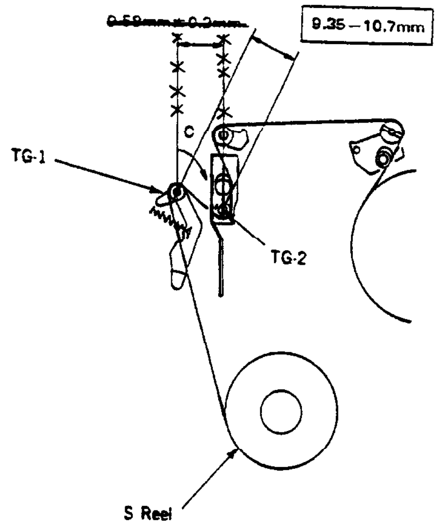


Fig. 47

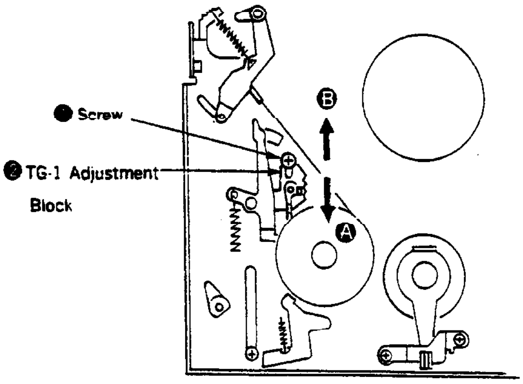


Fig. 48

3-28 FWD BACK TENSION ADJUSTMENT (Fig. 49)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-7, remove the LED base.

2. Adjustment

1) Select the REC mode.
2) Set the tension measurement reel (Ref. No. J-8)❶.
3) Using the dial tension gauge (Ref. No. J-7)❷, measure a tape tension at the outlet of TG-2. When this is done, pull the tape at a rate of 14mm/sec.
4) Change the position of the tention regulator spring ❸ position as shown in Fig. A so that measure center value of the tention is 4 g-6.5g.

Note : When this is done, see to it that the gear ❹ is not engaged with the S reel table.

3. Mounting

1) Referring to 1-1, mount the cassette compartment holder assembly.
2) Referring to 3-1, mount the LED base.

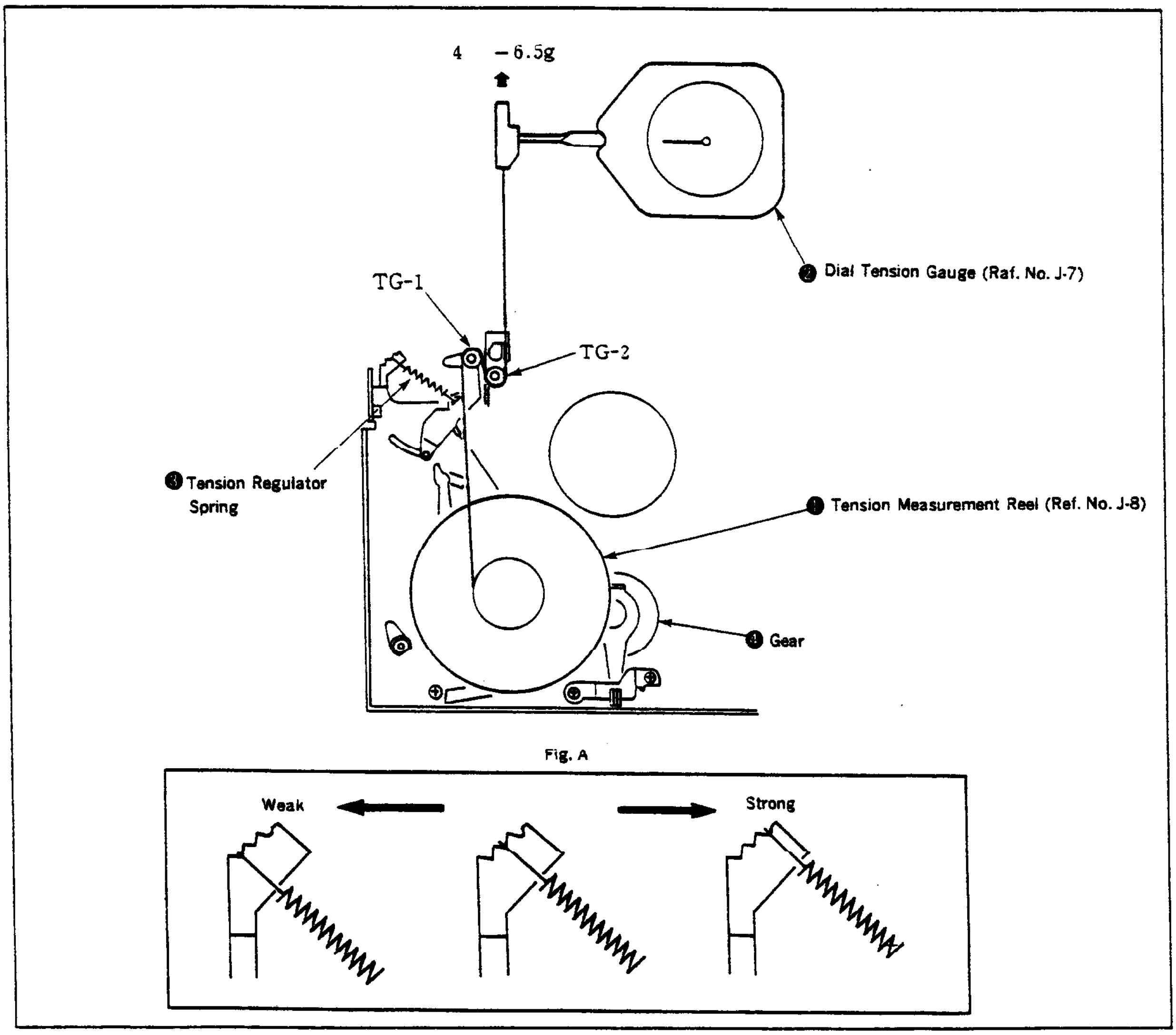

4 -6.5g
❷ Dial Tension Gauge (Raf. No. J-7)
TG-1
TG-2
❸ Tension Regulator Spring
❶ Tension Measurement Reel (Ref. No. J-8)
❹ Gear
Fig. A
Weak
Strong

Fig. 49

4. TAPE PATH ADJUSTMENT

The 8mm video system uses ATF (Automatic Track Finding) which instantaneously controls a tape running speed based on 4 types of pilot signals and performs high-precision tracking.

This does away a tracking control knob and allows accurate track tracing.

On the other hand, however, the ATF system has a problem in adjusting the tape path system. That is, if head tracing is out of order a little, the ATF system automatically corrects it, which means that perfect adjustment cannot be done.

To avoid this problem, a track shift jig had been used to adjust the tape path system. In the FL (Q) mechanism, the ATF system is forcibly operated to shift a tracking amount constantly (approx. 1/4) by setting the PATH mode. So, fine tracking adjustment can be easily done.

No track shift jig is required any more.

Example) For CCD-V11/V88

CN404

4	GND
3	$\overline{\text{CAM ADJ}}$
2	$\overline{\text{TEST}}$
1	$\overline{\text{PATH}}$

The path mode is set by shorting the pins ① and ④.

4-1 PREPARATION FOR ADJUSTMENT

1) Clean the tape running surfaces (tape guides, drum, capstan shaft, pinch roller). (Fig. 51)
2) Set the PATH mode by shorting the TEST pins (CN404 pins ① and ④ for CCD-V11/V88).
3) Connect to an oscilloscope.
4) Play back a tracking alignment tape (NTSC: WR5-1N), (PAL: WR5-1C).
5) Check that a RF waveform is flat at the inlet and outlet of the oscilloscope. (Fig. 50 ⓐ)

   When it is not flat, make adjustment in accordance with the procedures below.

   When the RF waveform is not flat at the inlet/outlet; (Fig.50 ⓑ and ⓒ)

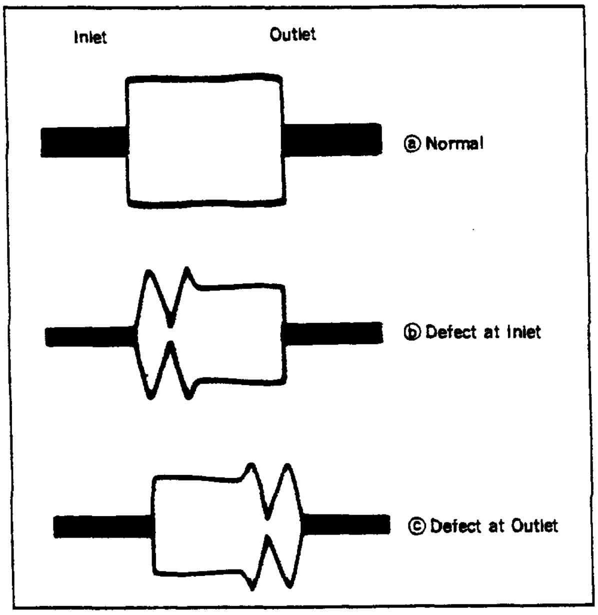

Inlet
Outlet
ⓐ Normal
ⓑ Defect at Inlet
ⓒ Defect at Outlet

Fig. 50

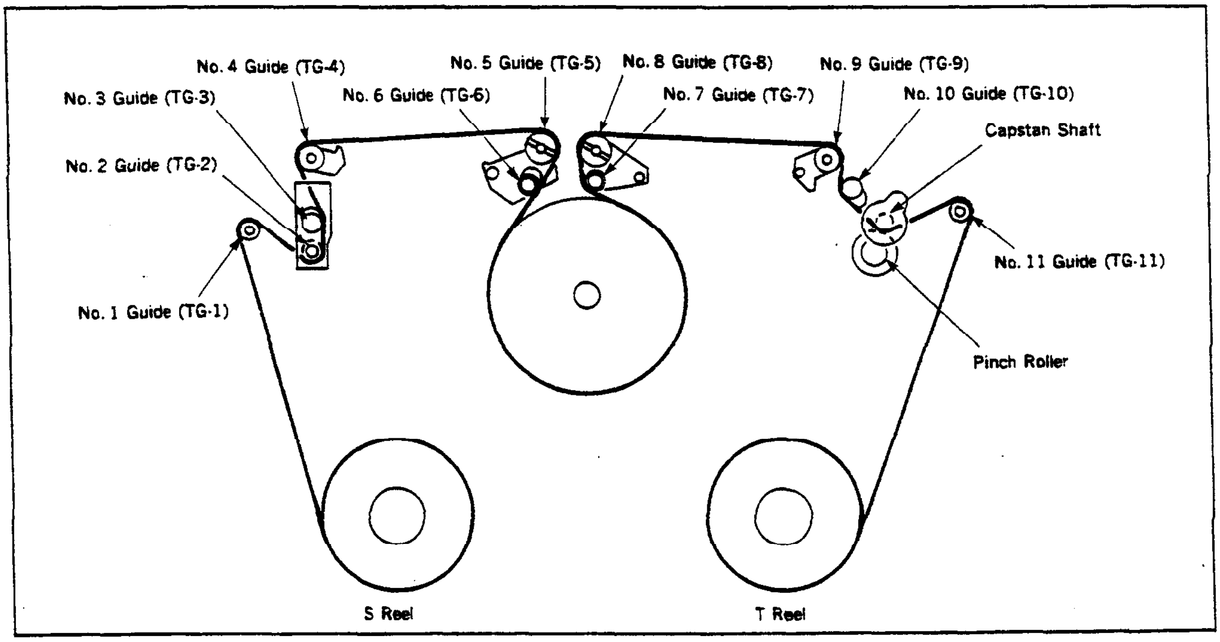

No. 4 Guide (TG-4)
No. 5 Guide (TG-5)
No. 8 Guide (TG-8)
No. 9 Guide (TG-9)
No. 3 Guide (TG-3)
No. 6 Guide (TG-6)
No. 7 Guide (TG-7)
No. 10 Guide (TG-10)
Capstan Shaft
No. 2 Guide (TG-2)
No. 11 Guide (TG-11)
No. 1 Guide (TG-1)
Pinch Roller
S Reel
T Reel

Fig. 51 Tape Guides Location

4-2 TRACKING ADJUSTMENT (Fig. 52)

1) Play back the tracking alignment tape.
2) Loosen the No. 5 guide (TG-5) lock screw ● and turn the No. 5 guide to flatten the waveform at the inlet.
3) Tighten the No. 5 guide (TG-5) lock screw ● to lock the No. 5 guide.
4) Loosen the No. 8 guide (TG-8) lock screw ● and turn the No. 8 guide to flatten the waveform at the outlet.
5) Tighten the No. 8 guide (TG-8) lock screw ● to lock the No. 8 guide. When this is done, make sure that the waveform does not change at the outlet.

Note : Be careful not to loosen the lock screw too much because the guide is easily moved.

Tape path Adjustment for "Guide Rail Base 2 with TG8 Gate Adjustment"

You do not have to adjust theTG-8 gate adjustment screw.

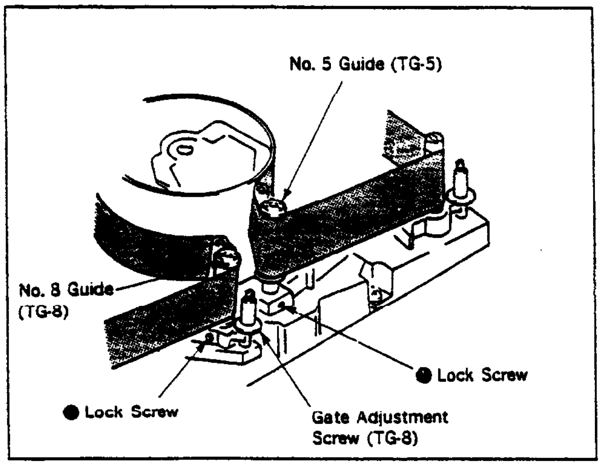


Fig. 52

4-3 NO. 4 GUIDE (TG-4) ADJUSTMENT

When an entire guide base is replaced, its height has been preste.

TG-4 Guide Height Presetting

1) With the top surface of the TG-4 guide leveled, rotate an upper flange by one turn. This is a preset height.

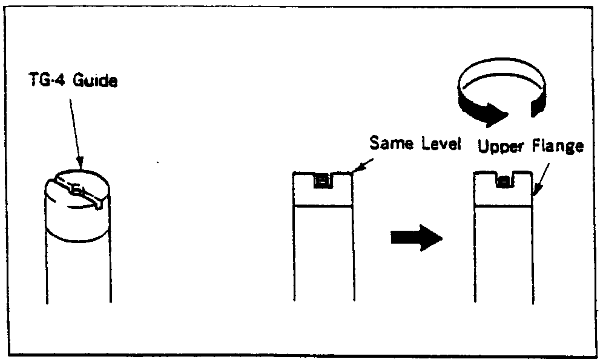


Fig. 53

No. 4 Guide (TG-4) Adjustment

1) Play back the tracking alignment tape.
2) In the FWD mode, check that the tape runs along a TG-4 lower flange. When there is a clearance, turn TG-4 counter-clockwise to put the tape along the TG-4 lower flange. turning angle must be within 180°.
When this is done, check that a tracking waveform (Fig. 54) is not changed.
When a tracking waveform inlet is downward as shown in Fig. 55, make tracking adjustment at the inlet side by raising a height of TG-4.

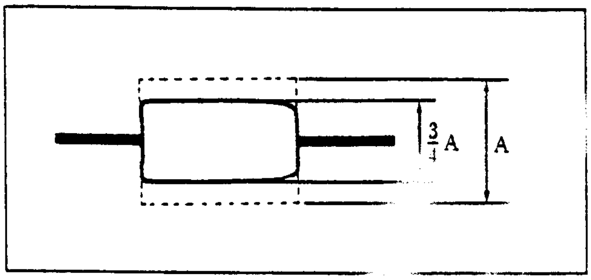


Fig. 54

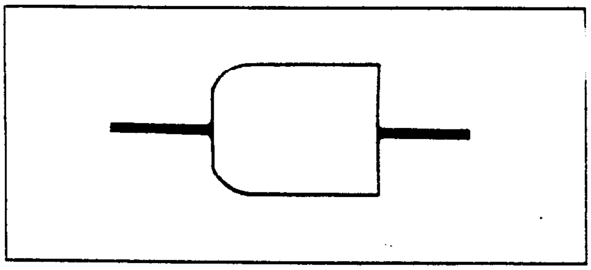


Fig. 55

Tape Path Adjustment for "Guide Rai[illegible] 1 with TG4 Gate Adjustment" (Fig. 56)

After adjusting an inlet, when the TG-4 lo[illegible]ge is curled in the REV mode, turn the TG-4 gate a[illegible]g screw at pitches of 45° to the left to remove a curl. ([illegible]ck screw is attached to the TG-4 gate adjusting screw. Fir[illegible] loosen the lock screw a little, and then, turn the gate adjusting screw. After adjustment, tighten the lock screw.)

If the TG-4 gate adjusting screw is turned to the left too much, the TG-2 upper flange (arrow-indicated part in the figure above) is greatly curled. If it happens, turn the screw to the right.

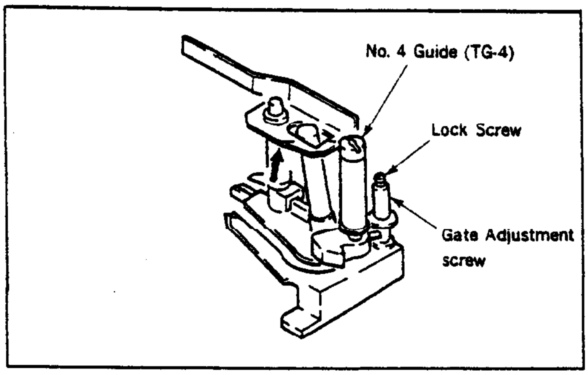


Fig. 56

4-4 NO. 11 GUIDE (TG-11) ADJUSTMENT

1) In the PLAY BACK mode, check that it has no deflection between the capstan and No. 11 guide (TG-11).
   (Criterion: 0.5mm or less)
   when the tape is deflected, turn the No. 11 guide (TG-11) to remove its deflection. (Fig. 57)
2) Select the REV mode and check the RF waveform at the outlet side. (Fig. 58)
3) If the waveform is defective, turn the TG-11 nut counterclockwise by 90° and recheck 2), 3) and 4).
4) Apply screw lock to the No. 11 guide (TG-11).

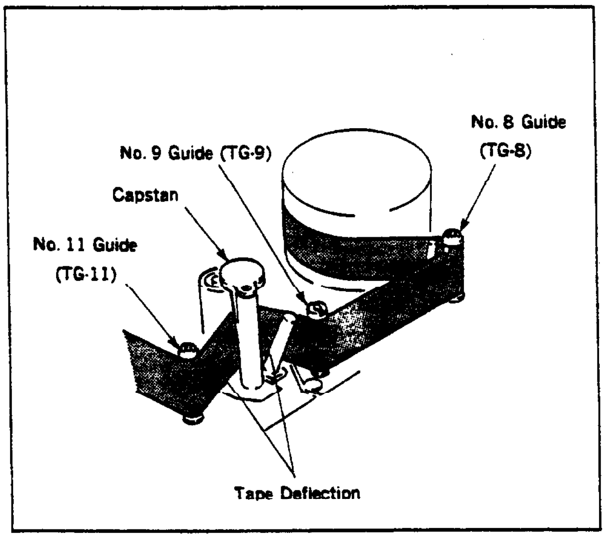

No. 8 Guide
(TG-8)
No. 9 Guide (TG-9)
Capstan
No. 11 Guide
(TG-11)
Tape Deflection

Fig. 57

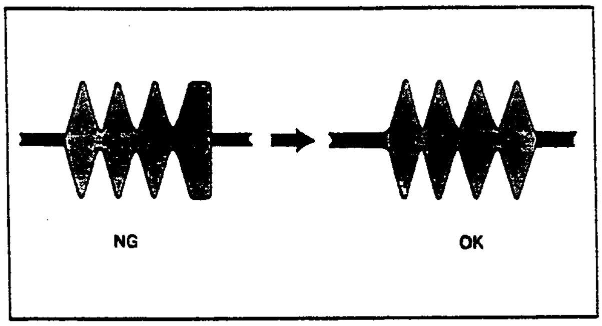


Fig. 58

4-5 CHECK AFTER ADJUSTMENT

1. Tracking Check

1) Play back the tracking alignment tape. In the PATH mode, shift a track. (Fig. 59)
2) At this time, check that a minimum amplitude value (E_{MIN}) is 67% or more of a maximum amplitude value (E_{MAX}). (Fig. 60)
3) Make sure that the waveform does not fluctuate greatly. (Fig. 61)

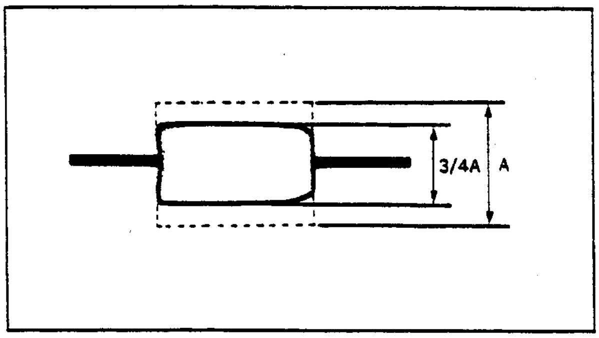


Fig. 59

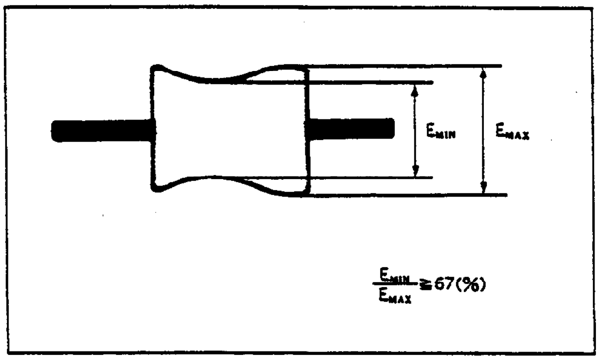


Fig. 60

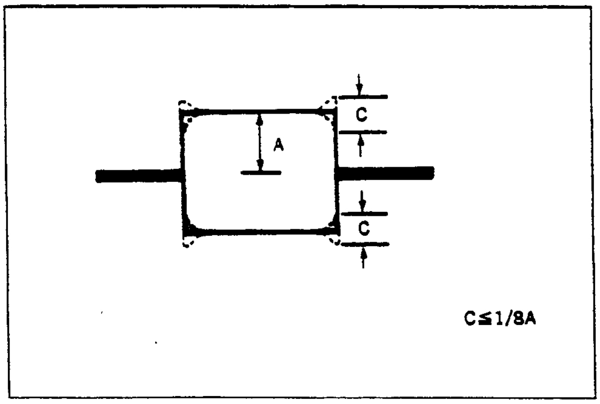


Fig. 61

2. CUE, REV Check

1) Play back the tracking alignment tape and select the $\boxed{\text{REV}}$ mode. At this time, waveform peak pitches must be unform. (Fig. 62 ⓐ) When they not uniform, make tracking adjustment in 4-2 and No. 11 guide (TG-11) adjustment in 4-4.
2) Select the $\boxed{\text{CUE}}$ mode. At this time waveform peak pitches must be uniform. (Fig. 62 ⓑ) When not uniform, make tracking adjustment in 4-2.

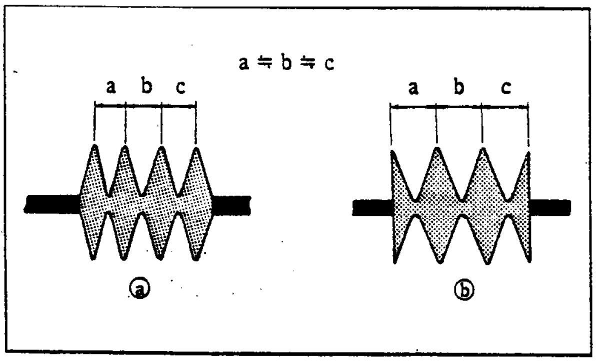


Fig. 62

3. Rise Check

1) Play back the tracking alignment tape.
2) In the PLAY BACK mode, check that the RF waveform rises horizontally within one second. At this time, check also that the tape is not deflected around the pinch roller. (Fig. 63)
3) Play back the tape after CUE/REV and FF/REW operation and check that the RF waveform rises horizontally within one second. At thistime, check also that the tape is not deflected around the pinch roller.
4) Repeat the checks in 2) and 3).

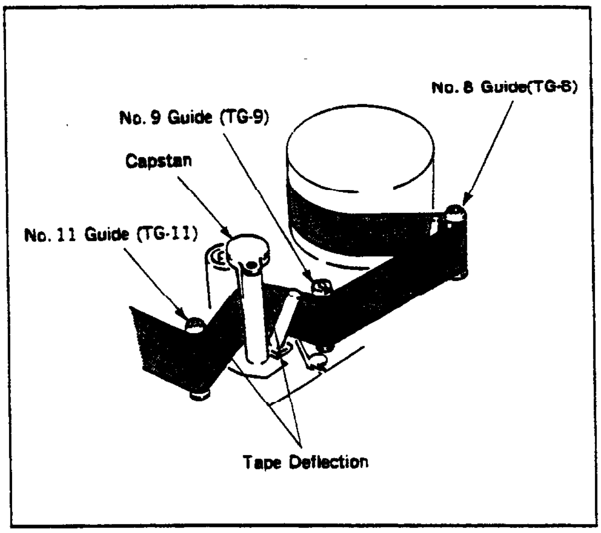

No. 8 Guide(TG-8)
No. 9 Guide (TG-9)
Capstan
No. 11 Guide (TG-11)
Tape Deflection

Fig. 63

4. Tape Running Check

In the CUE and REV modes, check that the TG-2 upper and lower flanges, TG-4 lower flange, TG-5 upper flange, TG-8 upper flange and TG-11 upper and lower flanges are not culed greatly. (Fig. 63)

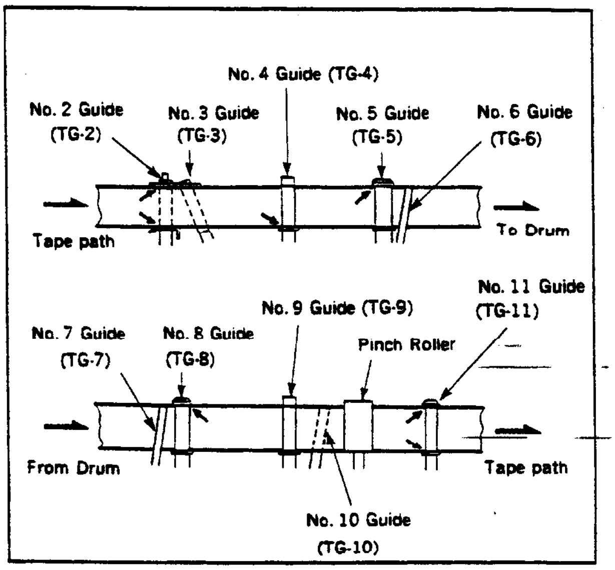

No. 4 Guide (TG-4)
No. 2 Guide (TG-2)
No. 3 Guide (TG-3)
No. 5 Guide (TG-5)
No. 6 Guide (TG-6)
Tape path
To Drum
No. 11 Guide (TG-11)
No. 9 Guide (TG-9)
No. 7 Guide (TG-7)
No. 8 Guide (TG-8)
Pinch Roller
From Drum
Tape path
No. 10 Guide (TG-10)

Fig. 64